Two Sections—Section One

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Railway Age
AND RAILWAY REVIEW

FIRST HALF OF 1928—No. 12 MARCH 24, 1928 SEVENTY-THIRD YEAR

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Railway Age

Vol. 84 March 24, 1928 No. 12

On the Boston & Maine at West Medford, Mass.

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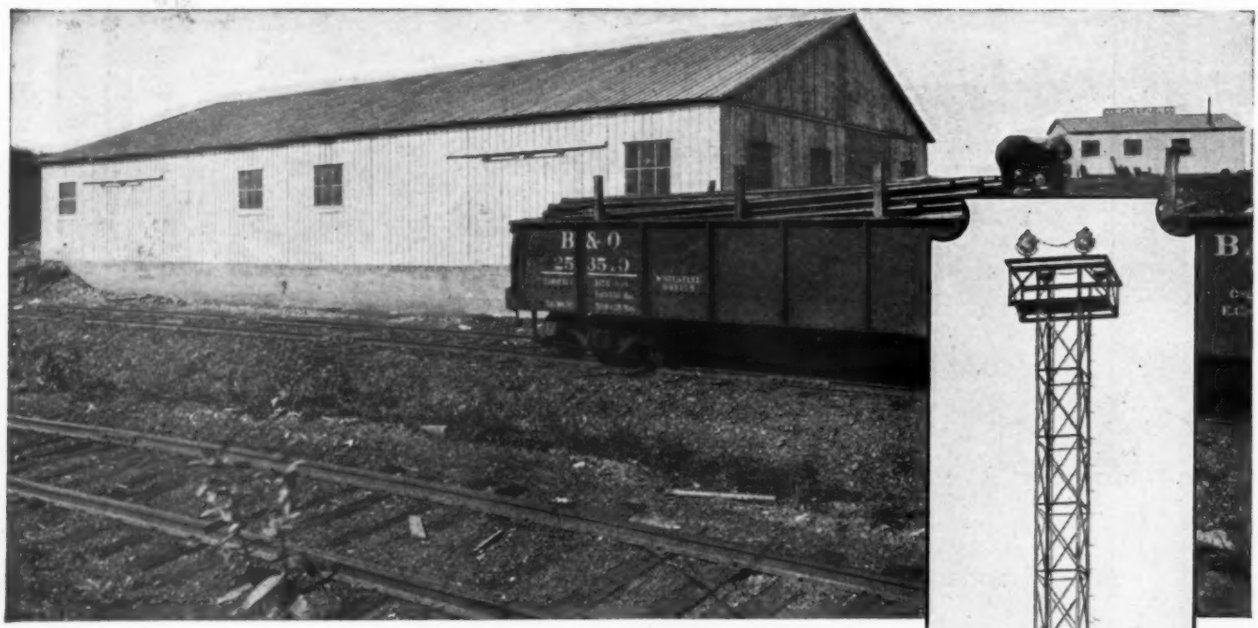

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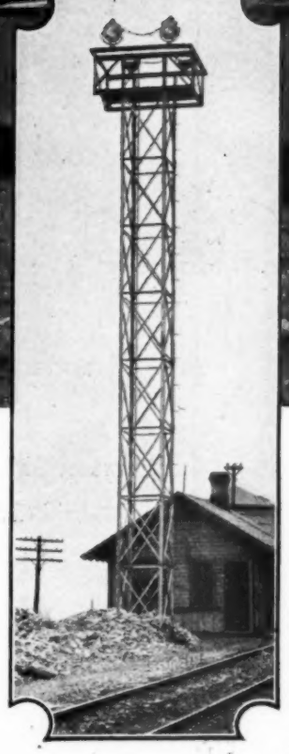

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Railway Age

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The Growing Problem of Suburban Traffic

THE New York regulatory commissions, metropolitan and state, recently denied an application of the Long Island Railroad for permission to increase its reduced-rate commutation fares by 20 per cent, the denial being based on the assertion that, the burden of proof being on the railroad, it had not succeeded in adducing testimony to prove its case. The question chiefly at issue seemed to be the allocation of earnings and expenses between passenger and freight service, between full-rate and reduced-rate passenger business and between the Long Island on the one hand and the parent company, the Pennsylvania, on the other. The problem of handling suburban passenger business tends each year to become more important. With the decline in through passenger business its relation to local passenger traffic tends rapidly to increase. At the same time, there are few railroads which consider the business profitable. A losing business which tends to grow is as serious a matter for the railroads as is a paying business which declines. What can be done to put the suburban business on its feet financially? Can there be improvement in methods of handling it? Can formulas be worked out for separating its income and expense from those of freight and through passenger traffic—formulas which will be so patently fair that they will be accepted even by those who are reluctant to believe?

"The Ghost in the Closet"

A MECHANICAL department officer of long experience on a road not notable for the modern character of its motive power recently said, "The ghost in the railroad closet is the serviceable locomotive in white lead." The reason for this assertion is apparent. With weekly freight car loadings appreciably less than a year ago, and the more intensive use of motive power, many railroads find themselves with surplus locomotives which are repaired, bearing surfaces painted with white lead and stored against future need. True, these locomotives represent a power reserve against possible subsequent peak traffic demands. The question may well be asked, however, if some roads are not lulling themselves into a false sense of security by depending on a power reserve less adequate than it seems. The general practice is to store the older and less efficient locomotives, and it is safe to say that a large percentage of these stored serviceable locomotives, as compared with modern motive power, are seriously deficient both in horsepower capacity, which is ability to take tonnage trains over the road at high average speed, and in fuel efficiency. As a result of intensive development and improvement, it is not unheard of for a modern locomotive to handle 80 per cent more ton-miles per hour on 50 per cent of the unit fuel consumption formerly considered good locomotive performance. From the point of view of economy, many of the locomotives now stored in white lead ought never to turn a wheel again in revenue service.

Railway Officers and Air Transportation

THAT the anticipated nation-wide development of air transportation, and its co-ordination with railway transportation, will be materially assisted and hastened by the railways themselves is indicated by the existing open-mindedness of railway officers toward the possibilities of air service. This is in marked contrast to the railway frame of mind toward motor coach and truck transportation which prevailed during the earlier years of the development of the highway carriers. It was generally felt at that time that motor coaches and trucks had no permanent place of importance in the transportation field. Quite different is the opinion of railway men of the future of air transportation. Conversations with many of them, men located in all parts of the country, lead to the conclusion that they are all interested in the current advances of air transportation, that they expect the airplane soon to become an important carrier of passengers, mail and express, and that they are eager as railway men to assist this new arm of transportation to find its logical place as an adjunct of the railways. Probably this is due to the romance which everyone sees in aviation. But regardless of the reason for this feeling among railway officers, its existence augurs well for the future of air transportation and for the steady improvement of transportation facilities in the United States.

Consolidating Interlocking Controls

DURING the last few years numerous roads have made marked savings in the charges for the operation of interlocking plants by combining the control of two or more separate plants into one machine and thereby decreasing the number of levermen required without reducing the safety or flexibility of operation. An interesting example of such an arrangement is the new desk-lever remote control plant on the Burlington at West Quincy, Mo., which replaces four separate mechanical interlockings in a territory seven miles long. This new plant has simplified the direction of train movement from and to several diverging lines, and is, therefore, an important operating center. The dispatchers were moved from Hannibal, Mo., 18 miles south, to the new tower, and with the facility afforded by the new arrangement they combine the operation of

the plant with the dispatching of trains on the remainder of the division, including 150 miles of line. The levermen previously required on each trick at three of the mechanical plants have thus been relieved. The saving in operating expense accomplished by consolidation amounts to $16,200 annually, which is about 30 per cent of the total cost of the new facilities. This installation is, therefore, an excellent example of what can be accomplished by remote control equipment. Facilities of this kind can be installed to advantage at numerous locations on many railroads.

Reports and More Reports and Their Purpose

EVERY railway man has heard of the clerk who had been making out the same report for years, day after day. Eventually, some one thought to inquire what it was used for, and it was found to serve no purpose except to keep the clerk busy. Anyone who has worked on a railway for any length of time knows that there is more than a little truth in the story and that useless reports are frequently made up. This fact, however, should not throw the blight of suspicion upon all reports. In fact, modern operating efficiency requires more reports than ever. Railway facilities of all kinds have grown to such proportions that close personal supervision of all of them is impossible for a superintendent, for instance. His only means of constant contact is through reports, either verbal or written. Reports are a material aid in various types of operations. In yard operation, for example, the efficiency of Selkirk and Rutherford yards on the New York Central and the Reading has been much increased by comprehensive reports. Daily cost reports have resulted in reductions in yard expenses on the Northern Pacific and other roads. Current reports of transportation expenses have produced savings on the Illinois Central, the New York, New Haven & Hartford and the Gulf, Mobile & Northern. Weather reports are material factors in maintaining the efficiency of the Canadian grain movement and of many fruit and vegetable movements in the United States. Car handling is also placed on a more scientific basis by the use of reports on many railways. Some reports are of slightly less value than so much waste paper, but the rendering of proper, authentic reports on many matters, such as those listed above, is a highly important adjunct to operating department activities.

Reading for Railroad Men Is Discussed

H. N. RODENBAUGH, vice-president of the Florida East Coast, is the author of a rather unusual article in the monthly journal of the American Society of Mechanical Engineers. It is a short and very much to the point discussion of what the young railway mechanical engineer should read, and why. While it is directed particularly to college graduates who enter the service of the mechanical department, it is not surprising to find that it will apply with equal force to any ambitious railway employee who is anxious to do more effective work and better his position. It is essential that such men should understand the importance of the human element and how to deal with it, and also that a railroad is a commercial venture and must be conducted on a profitable basis—its primary purpose is to earn money for its owners. While observation and experience are, of course, necessary in studying how to deal with the human element, this is a slow process, and Mr. Rodenbaugh's advice is that the young man "must read publications of many different fields if he is to acquire that breadth of view and that tolerance of thought which must be had if he is to intelligently and effectively direct human beings. He must read good newspapers thoughtfully, the better of the popular novels, and endeavor to become familiar with the elementary factors in music, art, religion, international history and national and international politics". That he may realize the necessity for "the production of a healthy net income item" the suggestion is that he should by all means "read and study intently books on commercial geography, economics and banking and finance". There is a need in most organizations for a greater appreciation of the human element, as well as of the necessity of having continually in mind the fact that a public utility must be conducted on a sound business basis. A study of these things will also do much to develop a breadth of view which is necessary on the part of those in authority in any industrial or commercial institution, and particularly in a public utility.

Railway Wages in 1927

A STUDY of the complete statistics of the wages paid by the Class I railways in 1927, which has been made possible by the recent publication of the Interstate Commerce Commission's statistics for December, shows that it cost the railways last year about $63,000,000 to pay the difference between the average hourly wage of 1926 and that of 1927. The total amount paid in wages was actually less than in 1926, but this was entirely due to reduction in the number of employees, which in turn was due to a decline in the volume of traffic. The average number of employees was 1,760,730, or 45,050 less than in the preceding year. The average number of hours worked per employee declined slightly but average compensation per employee for the year was $1677 as compared with $1656 in 1926. The reason for the increase in average annual compensation, in spite of the reduction in the average number of hours worked, was that the average wage per hour increased from 64.3 cents in 1926 to 65.7 cents in 1927. There was an increase in the average annual earnings of almost every class of employees. There was also a reduction in the number of almost every class of employees. The number of employees in train and engine service declined 9,629; the number of yardmasters, switch tenders and hostlers, 833; the number of transportation employees other than in train and engine service, 4,448; the number engaged in maintenance of equipment, 20,833; the number engaged in maintenance of way, 5,053; and the number in clerical service, 4,405. The decline in employees was less in proportion, however, than the decline in traffic. In consequence the number of tons carried one mile per employee declined from 249,156 in 1926 to 247,191 in 1927, and the number of passengers carried one mile per employee declined from 19,916 to 19,390. The total wages paid by the Class I roads in 1927 amounted to $2,952,717,174. If the average hourly wage had been only the same as in 1926, the total wages paid would have been $2,889,283,971, or $63,433,203 less. The decline in the net operating income earned by these

roads was $147,661,000 and, therefore, about 43 per cent of the decline may be attributed to the increase in the average wage paid.

Searching Questionnaire Discloses A Worthy Public Servant

THE New Hampshire Public Service Commission some months ago sent a long questionnaire to the Boston & Maine delving into almost every possible phase of the railroad's operations and policies. To this questionnaire the road has now made answer—and in the same detail. In the field of highway competition the road says it is suffering far more from the truck than from the motor coach. From the standpoint of its own operation of motor vehicles, it states that motor trucks make possible a greater frequency and flexibility of service for short hauls and that where traffic is not sufficient to support passenger trains the motor coach is the only service economically sound. The use of motor vehicles by the railroads, by keeping for the railroad business which might otherwise go to independent motor vehicles, tends to permit the retention of thin-traffic rail lines in service, rather than forcing their abandonment. The company urges that intrastate motor trucks and interstate trucks and motor coaches be subjected to the same regulation now laid down for railroads and intrastate motor coaches. Railroad passenger business has declined, the Boston & Maine says, but not as much as it would have, had through trains not been speeded up and service improved. Other points are covered—the company's recent capital investments and their nature, the improvement in freight service, the likelihood of dividends on all classes of stock, etc. The preparation of such a report undoubtedly entailed a great deal of work on the part of the railroad. On the other hand such a thorough searching of its own actions and policies and their frank publication ought to be appreciated by the company's patrons. Properly studied and understood by the leaders of public opinion the statement ought to engender a sympathetic attitude to the company. And railroads need nothing so much as public understanding of their accomplishments and their policies.

Praise That We Appreciate

THE *Railway Age* has received a letter from the vice-president in charge of operation of a railway which always has been one of the best managed and most successful large systems in the country, in which he says:

"I have taken the liberty to send you copies of letters which I have written to our staff in regard to various articles contained in the *Railway Age* of March 3. This is just an illustration of what occurs to a greater or less extent in the case of every issue which we receive.

"As I have told you personally, your magazine is the most valuable factor towards improvement in the railway world today, and it seems to me that it is improving. Every year is better than the one previous, and I am speaking particularly from a practical standpoint."

We greatly appreciate this unsolicited tribute to the contents of our editorial pages from a man who is generally recognized as one of the ablest operating officers in the country. We try to make our editorial contents interesting, but in far larger measure our efforts are directed to making them useful to railway officers of all ranks and classes. By this we mean that we strive constantly to get and publish material pertaining to all phases of railway management and regulation, and to improvements of every kind in the physical plants and in operation which, when read by railway officers, will help them to do their work more efficiently.

In other words, we try to make the *Railway Age* and the other publications of the Simmons-Boardman Publishing Company, serve as clearing houses of information regarding the best thought and the best practice of the railroad industry. To the extent that we are successful in doing this our papers make available to officers of each railway what they want and need to know as to what is being done on other railways, thus helping each railway to benefit by the successful efforts in the line of progress made by the others.

Probably many of our readers will be interested in knowing what were the contents of the issue of the *Railway Age* of March 3 regarding which the railway operating executive above quoted wrote memoranda to other officers of his road. His memoranda were written, or copies of them sent, to ten different officers, and the titles of the editorials and articles mentioned in them were as follows: "Operating Officers and the Law", and "Saving in the Electrical Department" (page 507); "Station Grounds are Private Property" (page 507); "'Graphic' Cases Reduce Car Delays" (page 518); "Book of Rules Education on the Missouri Pacific" (page 530); "Wheel-Grab Speeds Carloading Operations" (page 539), and "Automatic Draft Gear Inspection" (page 544).

Three things, at least, are essential to making it possible for the *Railway Age* to render the greatest practicable service to its readers. First, railway officers must generously give it information for publication regarding the important and progressive things they are doing, the way they are doing them and the results they are getting. It is very exceptional for a railway officer to be unwilling to do this.

Secondly, the editors of the paper must seek information throughout the country and present it in editorials or articles prepared by themselves or others which will tell concisely, accurately and informingly what is being done, how it is being done and the results that are being obtained. Most of the members of the editorial staff of the *Railway Age* and its affiliated publications have been selected because of their previous railway experience and special knowledge, and have been trained to prepare editorial material with the object of making it what railway officers want and need. Most of our editors spend a large part of their time in traveling in quest of practical and valuable material.

Third, the articles published must be carefully read by railway officers and the ideas and the information given in them utilized. Very rarely a railway officer is heard to say he is "too busy to read". Any man who is too busy to read is too busy to learn much. Such a man says, in effect, that he cannot learn from the experience of others. One's own experience may be the best teacher, but most men's experience is so restricted that unles they supplement it with knowledge of the experience of others they will never know or accomplish much.

To the cooperation its editorial department has received from the officers of railways in every rank and class the *Railway Age* largely owes such success as it has had in serving the railroad industry. No paper ever received more assistance from its readers in get-

ting editorial material, and we doubt if there is any other publication whose editorial pages are devoted to all the problems of a great industry which is so carefully read and so much used in a practical way by its readers.

Modesty forbids us to believe that all railway officers will agree with the operating vice-president quoted that the *Railway Age* "is the most valuable factor towards improvement in the railway world today", but we hope they will agree with him that "it is improving," and that "every year is better than the one previous". It is our sincere desire to make the paper of the greatest possible use to the railway industry and everybody connected with it.

An Unjust and Unwise Act

THE Senate in refusing to confirm the reappointment of John J. Esch as a member of the Interstate Commerce Commission has done a very unjust and unwise thing. When President Coolidge nominated Mr. Wood of Pennsylvania as a member of the commission the *Railway Age* opposed his confirmation because it looked so much as if he had been nominated to placate and represent certain Pennsylvania interests that it seemed improbable he could make a useful commissioner. The *Railway Age* also criticized the last decision of the commission in the Lake Cargo coal rate case, for which Mr. Esch voted, because we believed it was an effort to use freight rates to equalize conditions in two parts of the bituminous coal mining industry when the existing inequality of conditions was not due to freight rates. Why, then, do we say it was unjust for the Senate to refuse to confirm the reappointment of Mr. Esch?

Mr. Esch's case was entirely different from that of Mr. Wood. There was not and could not be any claim or suspicion that his candidacy was especially promoted by any interest that was concerned in the outcome of a particular case before the commission. His candidacy was opposed by such an interest, but it was not promoted by any such interest. Furthermore, whether the decision reached by the commission in the Lake Cargo coal rate case was right or wrong, Congress must assume a large part of the responsibility for it. Congress passed the Hoch-Smith resolution making a solemn declaration of policy which the commission could not avoid interpreting. That declaration was so worded that it had to be construed to mean either practically nothing or that freight rates should be used to equalize industrial profits. The guess that the commission made in the Lake Cargo coal rate case as to what Congress meant may have been wrong, but it certainly was not an unnatural one, and therefore did not justify such action by the Senate as has been taken in Mr. Esch's case.

Meantime, Congress has not repealed the Hoch-Smith resolution. Presumably as long as it is in effect members of the commission must continue, at the risk of their official lives, to guess as to what Congress means by it. But does Congress know what it means by it? Recent discussion in the Senate has shown that different senators construe it in accordance with the supposed wishes and interests of their particular constituents. In other words, the members of Congress do not agree as to what they mean by it, but, at the same time, they dare members of the commission to guess wrong as to what they do mean. We suppose that if a member of the commission guesses in the future in accordance with the views of a majority of the senators he will be allowed to keep his job, but if he guesses in accordance with the views of a minority he will lose his job when his term expires and may consider himself fortunate if he is not also drawn and quartered.

The action taken by the Senate in the Esch case is most unwise because it makes successful the worst example on record of the injection of both politics and sectionalism into federal railway regulation. The passage of the Hoch-Smith resolution was dictated by political motives. Its authors sought to win the favor of the farmers by putting through a piece of legislation which ostensibly would cause reductions in freight rates to the farmers, whether the farmers were entitled to them or not, with the result either of inflicting losses upon the railways or imposing an increased burden of freight rates upon industries other than agriculture. This may have been good politics, but it was bad economics, because there is no more economic justification for requiring the railways to discriminate in favor of the agricultural industry in their rates than there would be for requiring the automobile industry to discriminate in favor of the agricultural industry in fixing the prices of automobiles. As actually worded the Hoch-Smith resolution is unsound economically because it must be interpreted either as meaning nothing at all or as meaning that the commission should be influenced in fixing rates by differences of prosperity in all the country's various industries—in other words, that, regardless of the reasons for their prosperity or lack of prosperity, freight rates should be used to increase the prosperity of some and reduce the prosperity of others.

The passage of the Hoch-Smith resolution was a mistake as a matter of public policy because it is a specific direction from Congress to the commission as to how it shall make rates which can hardly be construed otherwise than as modifying the other broad provisions of law by which the commission is directed to make rates justly, reasonably, without unfair discrimination and so as to foster the provision of adequate means of transportation. On the theory which underlies the entire policy of federal regulation the commission is much more competent than Congress to decide how rates should be adjusted to make them reasonable, nondiscriminatory and adapted to causing the provision of adequate transportation. When the commission shall have thus made them it will have done everything in accordance with justice and the public interest that any regulating body can do. When, therefore, Congress gives it more specific directions as to how to regulate rates it disregards the reason for the existence of the commission and restricts the commission's authority and power to do justice and promote the public welfare in accordance with its presumably expert understanding of how freight rates can best be regulated to accomplish these purposes.

If it is not wise for Congress to try to tell the commission specifically how it should regulate rates, it is clearly much less wise for it to pass legislation to tell the commission how it shall regulate rates, and for the Senate to begin chopping off the heads of members of the commission when they have begun to regulate in accordance with what they understand to be the special instructions given them by Congress. What man of ability and independence of character will want to be a member of the commission if this is the way Congress is going to do? What will federal regulation become if men of ability and independence refuse to become members of the commission?

The vote of the Senate refusing to confirm the reap-

pointment of Mr. Esch evidently is not a condemnation of Mr. Esch's general work as a commissioner but of the view indicated by him by his vote in the Lake Cargo coal rate case as to the way in which the Hoch-Smith resolution should be interpreted and applied. It seems to say, in effect, that the Hoch-Smith resolution really means nothing different from the other provisions of the Act to Regulate Commerce regarding rate-making, and that, therefore, the commission should virtually disregard it. In the interest of sound rate regulation it is desirable that the commission should disregard it. But it would be much fairer and better for Congress to repeal the Hoch-Smith resolution than for Congress to leave it in effect and for the Senate, at the same time, to threaten with official death at the end of his term any commissioner who presumes to believe Congress means something by leaving it in effect.

Railroad Club Programs

JUST what should be the aim on the part of those who devise the programs for the various railroad clubs, in order that the influence of the clubs may be made more effective? This problem is far more important today than it was a few years ago. There has been an increase in the number of clubs of the older type, as well as the formation of a considerable number of supervisors' and foremen's clubs on many railroads throughout the country. Of course, much depends upon a careful analysis of the departmental and special interests of the members of a particular club.

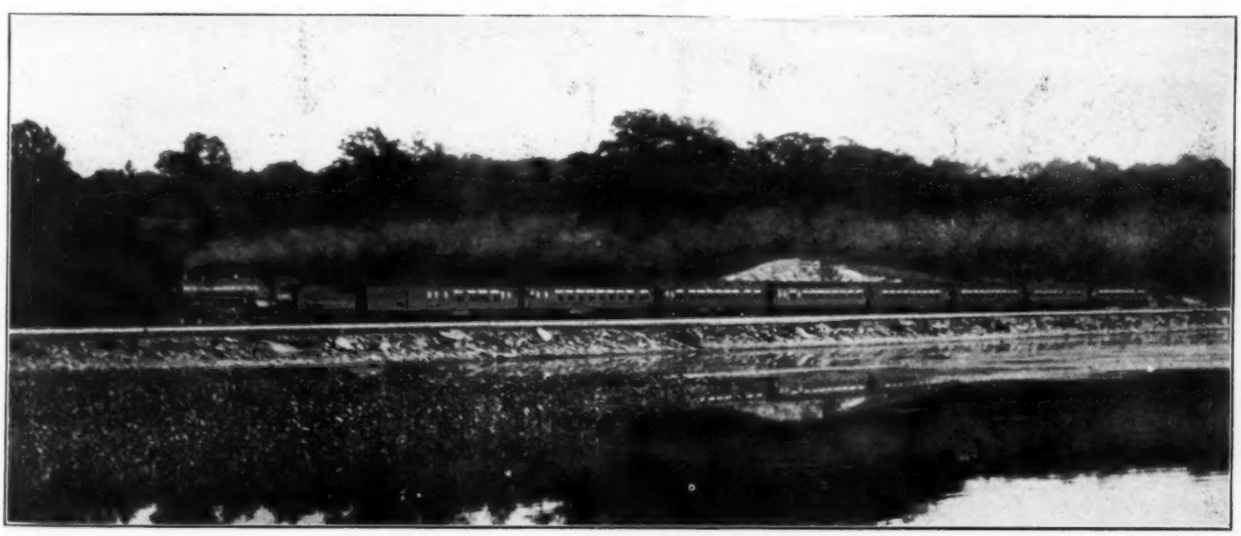
In times past the clubs have usually experienced cycles, sometimes for a period having enthusiastic and well-attended meetings and then for a time dropping into a period of comparatively uninteresting meetings and small attendance. It speaks well for those in charge of the different clubs that most of them have been steadily improving and growing stronger during recent years. For one thing, the older clubs have gotten closer together and have recognized the importance of exchanging experiences. The programs and handling of the regular meetings, as well as of special events, such as outings, dinners, etc., have been steadily improved. This has required a tremendous amount of effort and initiative on the part of the officers and committeemen.

The present season has been characterized by a number of unique programs, one of the most radical changes being made by the New York Railroad Club. Following the big dinner in December, which centered around aviation, the monthly meetings have been designated as "Plant Nights." In January, for instance, the American Telephone & Telegraph Company made a most interesting demonstration of television. In February the United States Steel Corporation showed a film on the making of steel, and at the March meeting, last week, the American Car & Foundry Company made a premier showing of a film covering the high spots of its activities, together with those of its associated and allied companies. There were shown particularly interesting phases of the construction of freight and passenger cars, motor rail cars, motor coaches, power boats, etc. A most unusual feature, and one which greatly increased the interest, was an orchestra which played music which had been especially arranged and adapted to the picture. The interest was further enhanced by the fact that in cases where the processes involved the handling of hot iron or steel, the films were colored. The large attendance and the keen interest displayed were noteworthy.

The innovation on the part of this club will undoubtedly be watched and studied with much interest. Such programs do not furnish much material for the printed proceedings. A relatively small proportion of the club membership can attend any one meeting, and the question arises as to the extent that the greater amount of technical material will be missed from the proceedings. This problem, however, is one that is not without a solution. A "Plant Night" does not necessarily mean that the older form of meeting need be entirely abandoned, nor is it necessary that every meeting night should be designated as a "Plant Night," although this will be done by the New York Club for the remainder of the season.

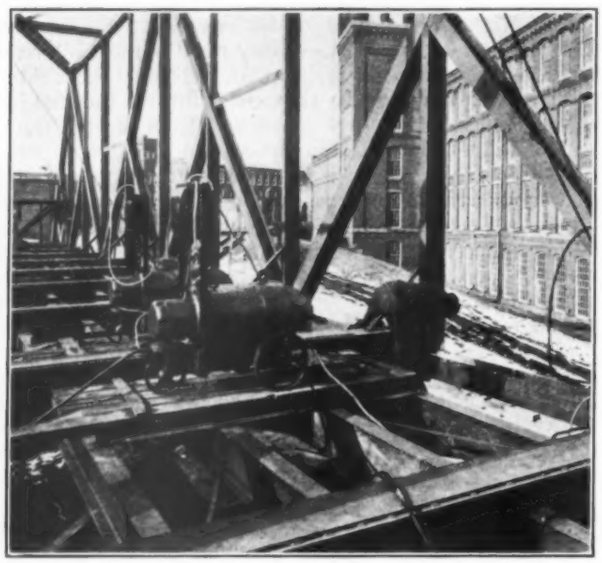
It is important that the railroad clubs critically study and closely check the effect of the meetings upon the entire active membership, in order that their programs and practices may successfully meet changing conditions and the more exacting demands because of competition of other interests for the attention of the members.

* * * *



The Twentieth Century Limited Along the Hudson

First All-Welded Truss Railroad Bridge Is Put in Service



Two 200 Ampere, One-Man Welding Units Accomplished all of the Welding Work

Westinghouse structure on B. & M. at Chicopee Falls, Mass., is built with a one-third saving in steel

ONE of the most recent developments in the field of bridge design and construction is the electric arc welding of all member connections, and while this method of erection has been used experimentally and in some bridge reinforcement work, we now have the first all-welded through truss railroad bridge to be put in service in this country. This new bridge, which is located on the Boston & Maine, has been built over a power canal at Chicopee Falls, Mass., on an important industry spur serving the Westinghouse Electric Company's plant at that point. While not a large structure, the bridge holds much interest for railway engineers, not only because it is the first structure of its kind in the country, but of more importance, because it points the way to certain definite economies in bridge design and construction.

Introduced Two Years Ago

Less than two years ago arc welding was introduced into the field of heavy structural steel construction, but within the short space of time which has elapsed, such rapid progress has been made both in the use of structural welding and in understanding the theories surrounding it, that considerable interest has been aroused with regard to the adaptability of the arc welded joint in bridge structures, and as regards whether or not such joints will stand up under the stresses imposed by railway loadings and impacts. It was this interest which led to the construction of the Chicopee Falls bridge, a project which was carried out by the Westinghouse Electric Company, East Pittsburgh, Pa.

General Description of the Bridge

The Chicopee Falls bridge is a single track, single span structure of the Warren truss type, with sub-divided panels, and owing to the angle of crossing of the power canal, has a 72-deg. skew. The length of each truss is 134 ft. 8 in., but owing to the skew of the bridge, its over-all length is about 175 ft. The width of the bridge between trusses is 17 ft., and the vertical height between

General View of the All-Welded Bridge Just Before It Was Moved Into Place

the chords of each truss is 24 ft. 8 in. All members of the bridge are single structural shapes except the cast iron pedestals at the masonry abutments, and the floor beams, which consist of 21-in. rolled beams with welded cover plates. All chord and diagonal members of each truss are Carnegie wide flange beams of the 10-in. depth group. The other members of the bridge, including all bracings, are made up of an assortment of standard I-beams, Carnegie wide flange beams, angles and small H-beams. No channels were used in any part of the bridge.

Unit Stresses Allowed

The Chicopee Falls bridge was designed for Cooper's E-50 loading. In working out the details of construction, standard unit stresses were allowed for all structural members, and the allowable stresses in welds were based upon experimental tests and actual experience in welding construction up to the present time. In the actual construction of the bridge, several types of welds were employed, principally with the view of determining the action of the various types under severe service conditions, and to determine ultimately the types of welds best suited for each type of joint in bridge construction. The three classes of welds used most extensively were fillet welds, slot welds, and butt welds, tack welds and spot welds being used in only a few instances and then principally for erection purposes.

In the case of fillet welds, ⅜-in. fillets were adopted as standard, and a unit stress of 3,000 lb. per lin. in. of fillet weld was allowed in shear in any direction. In the actual design of the bridge it was found that various sizes of fillet welds could have been used, depending upon the strength to be developed at each particular joint. Owing to the difficulty of accurately determining the size of the weld as it is being built up in the field however, it was thought advisable to standardize on the ⅜-in. fillet weld and thus avoid the possibility of confusion. All of the slot welds are ½-in. by ½-in. in section, with an allowable unit stress of 5,000 lb. per running in. of weld.

This latter type of weld is unusually compact, which accounts for the high allowable unit stress, wherein

A View Between Trusses Showing the General Arrangement of the Bridge Members

Welding the Gusset Plate on One of the Lower Chord End Joints

1½-in. of the slot weld is equivalent approximately to one ⅞-in. rivet in single shear. It will be noted also that the value of the ½-in. by ½-in. slot weld was figured at almost twice that of the ⅜-in. fillet weld. In using the butt type weld, a unit stress of 13,000 lb. per sq. in. of weld was allowed.

Details of More Important Connections

Reference to the accompanying detail drawings will show clearly the more important connections made in the bridge and the type of welds used in each case. Fig. 1 shows a lower chord panel point with its gusset plates and welds. Here, slot welds connect both the chord and web members to the gussets, transferring tension or compression stresses from the flanges of the members directly behind the slots, to the gusset plates at both edges of the slots. It will also be noted that triangular fillet welds assist the slot welds by transmitting stress from the edges of the web member flanges to the inside face of each gusset.

Fig. 1 also shows a bottom chord splice. In addition to two splice plates, which are joined to the chord members by fillet welds acting in shear along the top and bottom edges, the abutting ends of the two sections forming the lower chord are butt welded together, the weld having the same cross section as the smaller chord member. Since a tensile stress of 13,000 lb. per sq. in. was allowed in the butt weld while 16,000 lb. per sq. in. was allowed in the chord members, it is evident that the butt weld may be assumed to take care of 81 per cent of the splice load, while only 19 per cent is left to be carried by the splice plates.

In forming the butt weld at this point, the flanges of the lighter chord member were bevelled on the outside edge at the end, at an angle of 45 deg., and the web of this member was bevelled on the top face to the same extent in order to facilitate making the weld. In actually making this joint in the lower chord, the splice plates were first used for erection bolting to hold the members in alinement while the butt weld of the chord webs was made. Following this weld, the plates were removed while the flange welds were made, and then the plates were replaced and fillet welded to the chord members.

The type of bottom chord panel point connection shown in Fig. 1, making use of gusset plates, occurs only at two points in each truss, these being the first panel

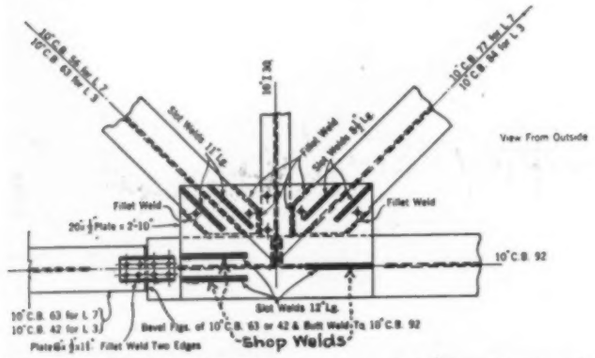


Fig. 1—Typical Welded Connection of Lower Chord with Gusset Plates

points each side of the mid span. All other panel point connections at the lower chord, with the exception of the end joints, were made without the use of gussets. Fig. 2 shows one of these joints, from which it will be noted that butt welds alone are used, connecting the

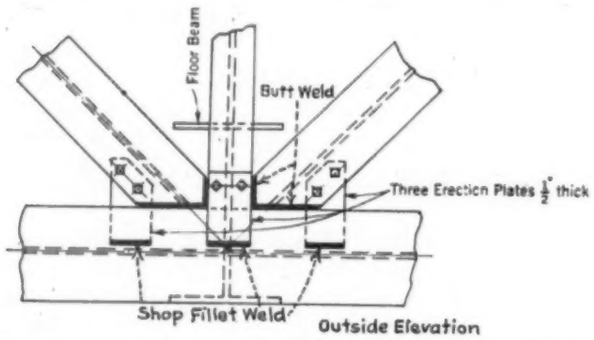


Fig. 2—Typical Detail of Lower Chord Joint at the Foot of a Hanger

upper flanges of the chord member with the flanges of the intersecting web members. The three small plates shown in Fig. 2 were fillet welded to the chord member in the shop and were used solely for erection purposes.

Fig. 3 illustrates the method adopted in making a lower chord end joint. Here, in each case, the chord tension is developed by slot and fillet welds at ½-in.

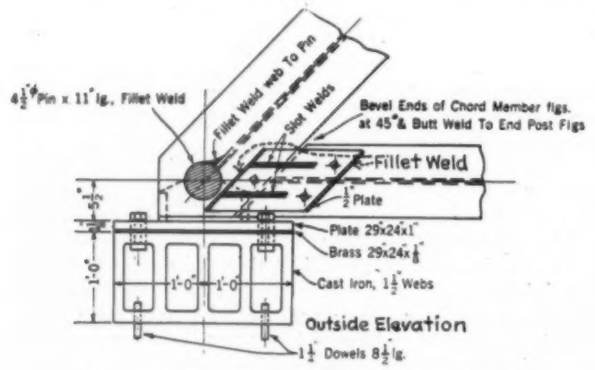

Fillet Weld web To Pin
Slot Welds
Bevel Ends of Chord Member figs. at 45° & Butt Weld To End Post Figs
Fillet Weld
½ Plate
Plate 29"x24"x1"
Brass 29"x24"x⅛"
Cast Iron, 1½" Webs
Outside Elevation
1½ Dowels 8½" lg.

Fig. 3—Detail of End Joint and Pedestal

splice plates, and by butt welding of the flanges only at the junction of the chord member and the end post. The end post was bored in the shop for the 4½-in. pin shown, which is held in place by a shop fillet weld connecting the pin to the web of the end post. By so welding the pin in place, the ends of the pin could be cut flush with the sides of the end post, and the need of pin nuts was eliminated.

The pin pedestal, consists of an assembly of plates welded together in the shop. The main bearing pedestal is an iron casting, selected for this particular job, rather than a steel casting because of its superior rust resisting qualities.

The details of the hip joint are shown in Fig. 4. Here the ends of the upper chord and end post are milled and butted together. The gusset plates used at this point are both slot and fillet welded to the members as shown,

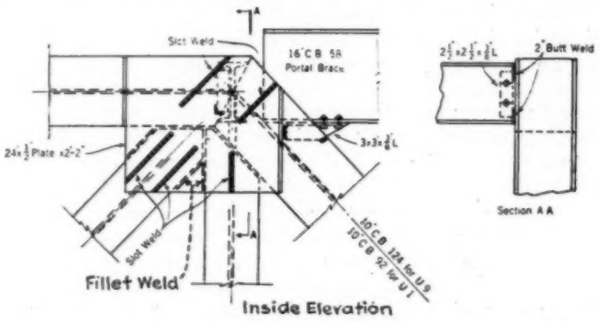


Fig. 4—Detail of Hip Joint Where Gussets Are Used

their principal functions being to transmit the web member stresses and to hold the chord and end post in position.

Floor System of Unusual Design

In designing the floor system of the bridge, 21-in. rolled I-beams with welded cover plates were used for floor beams. The connection of each floor beam with the lower chord is a triangular butt weld between the inside flange of the chord, the post at the panel point, and one side of the web of the abutting floor beam. These welds have a minimum section of ⅝-in. by 18 in., and are designed to resist a shear slightly less than 100,000 lb. Supplementing the butt weld, fillet welds were also

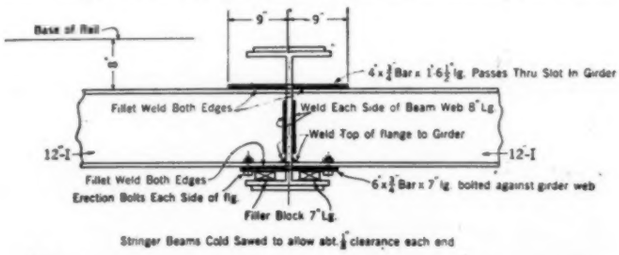

Base of Rail
Fillet Weld Both Edges
Weld Each Side of Beam Web 8" Lg.
Weld Top of flange to Girder
12"-I
Fillet Weld Both Edges
Erection Bolts Each Side of fig.
Filler Block 7" Lg.
Stringer Beams Cold Sawed to allow abt. ¼" clearance each end

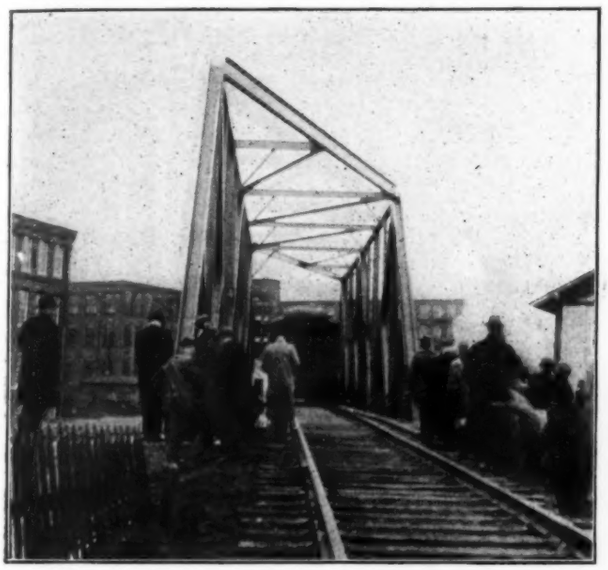
Fig. 5—Welded Connection of Stringers to Floor Beams

made between the inside flange of the lower chord member and the lower flanges of the floor beam. As already mentioned, the butt weld at the floor beam—lower chord connection, is on only one side of the floor beam web. On the opposite side is a small angle, tack welded to the floor beam, and used solely for field erection.

Each floor beam joint is provided with a single angle knee brace at 45 deg. This detail was given special consideration in view of the inflexible character of the knee brace connection, which consists of direct welds between the brace and the members. In designing the brace, calculations were made to determine the approximate tension in it due to the resistance of the stiff vertical truss member against deflection inward, with the flexure of the floor beam under live load.

The four lines of 12-in. I-beams serving as stringers are designed to act as continuous beams, this being done

for two principal reasons; first, to reduce the bending moments and thereby permit the use of lighter stringers; and second, because welded connections between stringers and floor beams necessarily introduce a degree of rigidity that would imply a considerable continuous action. Adopting this design, the stringers used are connected at the floor beams as shown in Fig. 5. Here the floor beam web is slotted to pass a tension bar connecting the top flanges of opposite stringers, these bars being joined to the stringer flanges by fillet welds along each side. In addition to the tension bar, compression plates or bars are welded under the bottom flanges of the stringers and are butted against the floor beam web.



The First Train Passing Over the Bridge. View Shows the Excessive Skew of the Structure

Fillet welds between the ends of the stringers and the web of the floor beam carry most of the vertical reactions and also assist in resisting the negative bending moment at this point. A minor fraction of the vertical reaction is considered to be transmitted through the erection filler blocks shown in the drawing.

Owing to the fact that obstructions were not permitted in the power canal at Chicopee Falls except during week ends when industries were shut down, it was necessary to erect the bridge on blocking, on one side of the canal, and then to pull the completed structure into place on the abutments. In the actual construction of the bridge, two welders alone were employed, assisted by common labor for handling the members and for placing and removing scaffolding.

The welding equipment used in the work consisted of two Westinghouse single-operator welding sets, each with a rating of 200 amperes. These sets are particularly designed for speed and adaptability in structural welding. The welding current of the generator is controlled by turning the handle of a single dial rheostat in the field circuit, a turn of the handle setting the desired current for welding operation. The arc produced by the welders is easily struck and easily maintained, the generators being designed to respond instantly to voltage variations caused by changes in the length of the arc. Special bearing construction in the welding units used, enables them to operate satisfactorily while tipped or inclined on almost any angle, and the three-wheel carriage provided makes the units steady on the most uneven footings.

Little difficulty was experienced in any part of the actual construction of the bridge. Mild steel wire was used for making all welds. Erection bolts were used for all stringers, floor beams, main truss members and bracing members too heavy for two men to handle without a derrick. When the bridge was completed, blocking was erected in the power canal during low water over a week end, and the bridge was pulled into place by horse-operated capstans. When in final position, the railroad track was laid, and shortly thereafter, the first locomotive was moved over the bridge.

Valuation Progress

A STATEMENT issued by Frederick H. Lee, secretary of the Presidents' Conference Committee on Valuation, under date of January 31, 1928, shows that 86 final valuations were issued by the Interstate Commerce Commission in the six months ending December 31, 1927, making a total of 616 reported to date. Of the latter total, 306 reports covered properties of carriers which did not protest against the tentative valuation and 94 reports were upon carriers which either filed a protest but failed to enter an appearance at the date assigned for hearing, or presented no evidence or brief in support of their objections and claims. In these cases the tentative valuations have been made final by order of the commission.

There are about 10 cases, in addition to those previously reported, in which tentative valuations have also become final by reason of the failure of the carriers to file a protest within the statutory period of 30 days after the service of the tentative valuation. The commission is expected to issue its report and orders making them final. Since June 30, 1927, the commission has served 54 tentative valuations, of which seven were for the following Class I carriers: the Baltimore & Ohio, the Chicago, Milwaukee, St. Paul & Pacific, the Erie, the Kansas City, Mexico & Orient, the Kansas City, Mexico & Orient of Texas, the Union Pacific and the Western Maryland. This makes a total of 1,076 valuations served to December 31, 1927.

During the year ended June 30, 1927, $8,432,409 was expended in connection with the valuation work by Class I carriers reporting to the Presidents' Conference Committee, making a total amount so reported by these carriers for the 14 years ending June 30, 1927 (with a few smaller carriers not reporting,) of $100,187,567. The expenditures of the Bureau of Valuation for the year ending June 30, 1927, were $1,712,052, making a total expenditure of the Bureau from the beginning of valuation work to June 30, 1927, as reported in the annual reports of the I. C. C. to Congress of $29,968,079.

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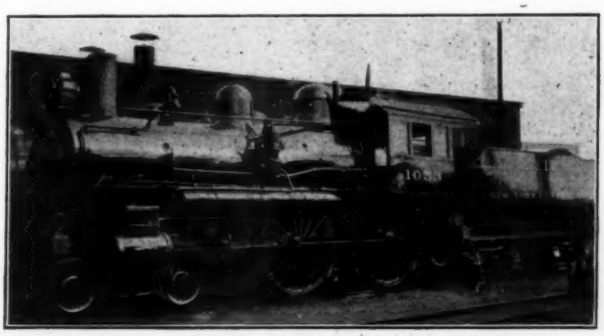


N. Y. C. 1053, Formerly 870, Which Used to Pull the Empire State Express

Dual Electric Locomotives on "North Shore" Line

FACILITIES of the Chicago North Shore & Milwaukee for handling carload freight business have been increased with the placing in service of two additional electric locomotives of a new type. The feature of these locomotives is their double source of power —trolley and storage battery. The trolley is used on the main line and all other trackage where overhead power connections are afforded. Use of the storage battery for moving freight on industrial sidings and switch tracks without trolley connections greatly increases the flexibility of operation. An economical feature of these locomotives is the fact that the storage batteries are recharged from the trolley while the locomotives are in service on the main line. The absence of smoke, noise and noxious gases permits running the locomotives into buildings where a steam locomotive would be objectionable.

Each of the locomotives weighs 65 tons. They are each equipped with four 205 hp. motors and a battery of 192 cells, rated 600 amp.-hr. and capable of delivering 260 kwh. on one charge. Operating on the battery alone, one locomotive can haul 33 loaded freight cars a distance of 5¼ miles at a speed of 12 miles an hour on one charge.

With a light load each locomotive can run on the battery at a speed of 20 miles an hour.

A motor-generator set rated at 25 kw. is located in the main cab of each locomotive. Its control is automatic by the use of a contact in an ampere-hour meter in the battery circuit. When the battery becomes fully charged, this contact automatically causes the motor-generator set to shut down. When the battery becomes about 15 per cent discharged, the set is automatically started.

If, while the motor-generator set is running, the locomotive leaves the electrified line, the set will shut down and start again upon the return of trolley power, without attention from the operator. Transfer from trolley to battery power is made automatically by means of a relay which actuates the tranfer contactors. In order to restore trolley power, however, it is necessary to move the master controller to the first notch.

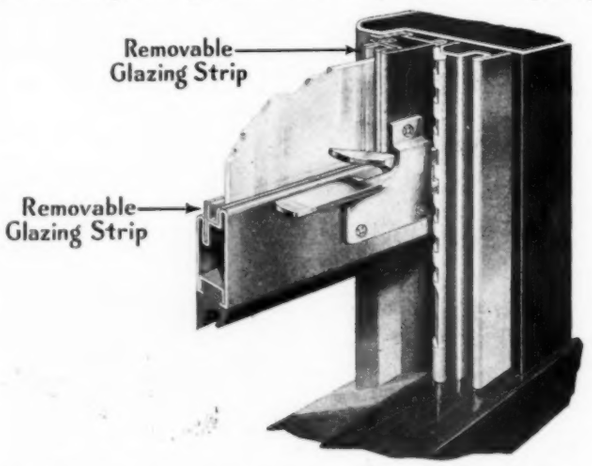
Each locomotive has a one-hour rating in tractive effort of 22,000 lb. at 14 miles an hour, and a continuous rating of 17,000 lb. at 15 miles an hour when operating from a 600-volt trolley.

Electric Locomotive Battery Characteristics

Ampere-hour capacity at 6-hour rate	680
Average volts at 6-hour rate	380
Kilowatt-hour capacity at 6-hour rate	258
Maximum discharge rate in amperes	3,000
Maximum kilowatt discharge rate	600
Approximate weight of battery, lb.	3,000

Removable Glazing Strips

THE O. M. Edwards Company, Inc., Syracuse, N. Y., has recently completed the development of metal car window sash with removable glazing strips. When brass window sash first made its appearance some years ago, there was no provision for quickly reglazing the sash in case of glass breakage. With this new feature a sash may be reglazed in as short a time as two and one-half minutes without removing it from the opening. Brass glazing strips are set in slots in the sash on the outside of the glass, which sets in a rubber strip of channel section. To replace the glass the brass strips are removed from the two side stiles and then from top rail, and the new glass placed in the opening. The strips are then reinstated in their grooves in the reverse order and the sash is ready for operation. No screws are used to hold the strips in place.



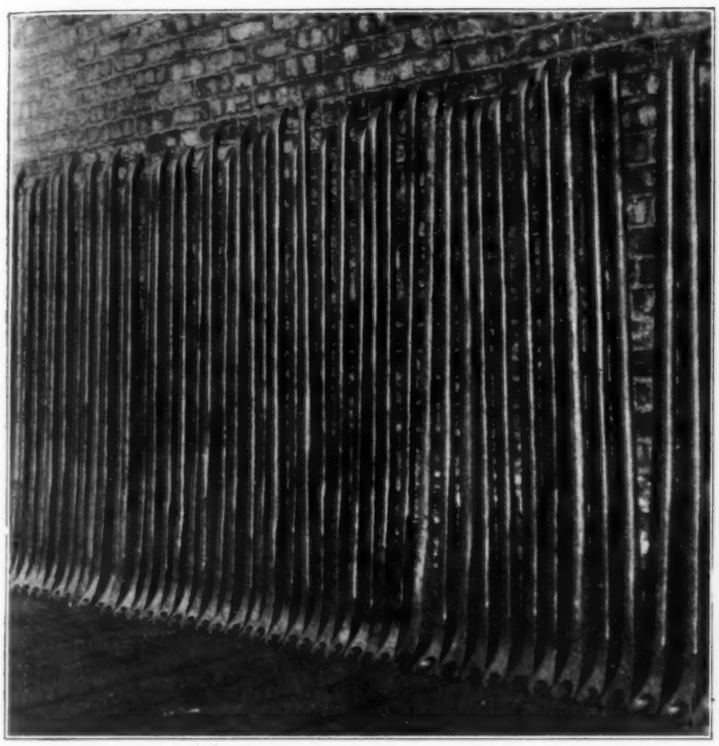
The Edwards Removable Glazing Strips make it possible to Replace a Window Pane with the Sash in Place

One of the New 65-Ton Dual-Power Supply Electric Locomotives on the Chicago, North Shore & Milwaukee

More Standardization of Railway Supplies Is Needed

Savings in better deliveries, prices and inventories can be figured in millions

By W. L. Hunker
District Storekeeper,
Chicago, Rock Island & Pacific, Silvis, Ill.



It Takes 57 Types of Claw Bars to Please All the Railroads

AT the present time when an effort is put forth to keep stock inventories within reasonable limits and to buy material only as required, thought is being given to prompt deliveries, and items on which deliveries are slow are being analyzed to find out why they cannot be secured as quickly as others. In many cases it is found that the items on which deliveries are slow are "specials", which manufacturers do not carry in stock and make only as orders are received. These items are numerous and the fact that they are special has led to serious delays in maintenance, and to excessive costs by compelling makeshifts or excessive stocks to avoid any possibility of future troubles. The railroads are also paying extra prices for these special materials, as it costs to set up machinery for them.

Many of these items could be standardized by the railroads with benefit to themselves, as well as to the manufacturer. The latter would then be able to reduce the number of dies, patterns, etc., and could concentrate production on a few items which could be carried in stock to fill orders promptly. By concentrating on a few items and making fewer changes in machinery, prices could also be reduced.

The Battle of the Gages

The subject of standardization is not a new one to the railroads. It has been followed closely on some items, but it has been allowed to lag on others. Years ago it was recognized that this country needed a standard width of tracks and the "battle of the gages" resulted in the 4-ft. 8½-in. gage for all except some comparatively light lines in mountainous territory. It is interesting to think what conditions would be today if the gage had not been standardized. After the gage was settled came the interchange of cars. Then came the standardization of the important parts of the car, such as wheels and axles, couplers, brake beams, brake shoes, air hose, air brakes, etc., brought about by the Master Car Builders' Association, and continued by its successor, Division V of the American Railway Association. Here again the setting up of standards has worked for economy and efficiency. Without them the record performances now being made by the railroads would be impossible. If standards are good for equipment which interchanges, it should also solve some of the problems on other equipment which doesn't interchange, and in addition to increasing efficiency, afford reduction in inventories and expenses.

Some of this standardizing can be done by individual railroads, while some of the most essential can be done by the railroads working together. Standardization of castings—grey iron, malleable or steel—should keep one or more men on each road busy all of the time. When new equipment is purchased, some of the castings remain the same, while other parts are strengthened. Ordinarily, the pattern shop makes a pattern for the new castings and leaves the old one untouched, when possibly the new pattern would do for both. Older patterns should be checked continually to see if two or more cannot be combined into one, and to reduce the number of patterns of castings to offset the new ones which it becomes necessary to add to the stock for new equipment.

Large reductions can be made in forgings of one kind or another for locomotives. Here is an opportunity to consolidate, so that instead of making each by hand, quantities sufficiently large can be ordered to warrant dies for machine manufacture. It would be necessary to machine more stock than formerly, but this would be economical in the long run, through the smaller cost of manufacturing by machinery. Roads not equipped with power machinery to make forgings might find that forgings could be purchased to advantage.

Too Many Brake Hangers

Freight car forgings are other items where reductions follow standardization. Most of the freight cars have inside brakes, but the stores are faced with a multiplicity of hangers of one kind and another, on some of which the issues are so small that to justify setting

up a machine to manufacture them requires stocking up several months ahead, distorting the balance sheet and creating unnecessary expense in case they become obsolete or are changed in design. Other forgings, such as grab irons, also affect the material balances the same way. One road having many all-steel cars in its equipment, has recently reduced its material balance about $43,000 by a study of fabricated parts and by redesigning some of them. Part of the saving was the result simply of omitting the punching of one rivet hole which distinguished the right piece from the left.

The number of lengths of boiler flues, arch tubes and superheater tubes can often be reduced by a careful study of the requirements the number of locomotives involved, and the necessity for short pieces of welding, as by the plan of using second-hand flues for the smaller power. Tank and firebox steel stocks can be radically reduced by checking the sizes used most frequently and discontinuing the sizes little used. Usually, the requirements of the latter can be met without raising the stock of the popular sizes. Tank steel is usually cut up into various sizes, and with some assistance from the shops, a reduction can be made in the number of sizes carried, while ordinarily all sizes on which the issues are light can be discontinued.

Use Narrower Lumber

Lumber of all kinds is a fruitful source of study in standardization. Usually this item requires a great deal of study from representatives of all using departments, and the extent of the reduction is measured only by the co-operation received from them. Progress cannot be made unless the engineering departments help. Wide platform boards are usually unnecessary, and except to a limited extent, boards over 10 in. wide are not required.

In building platforms, two 2-in. by 6-in. or 3 in. by 6-in. boards are as good as one 12 in. wide, and the cost of 6-in. material is less than 12-in. stock, which is also becoming harder to secure promptly. Car lumber, especially car oak, and in many instances pine car sills, can also be reduced to advantage.

Stocks of bolts, rivets, etc., include many odd sizes which can be eliminated without reducing the efficiency of the stock. All roads have sizes on which the consumption is so small that it is hardly worth while to stock them. Recently, one railroad prepared a list of sizes of bolts on which the issues were small and put this list in the hands of its store counterman at all points, with instructions to find exactly where any of the sizes issued were used. It was possible to drop many sizes from stock and thus reduce the inventory and provide room for other items needing the space. A canvass on the same road indicated that it could limit the stock of button head rivets to 5/8-in. and under, and cone head rivets to sizes over that diameter, this road not having any great quantity of all-steel freight car equipment. A few button head bridge rivets are purchased from time to time for the steel bridge erecting crews, but the plan reduced the number of items of rivet stock by about 50 per cent.

Switch Tie Sizes Excessive

In recent years, some railroads have reduced the number of lengths of switch ties carried. as well as the number of widths and thicknesses. This has proved of value to the stores department in stocking ties for treatment and in furnishing ties to the line. It is much easier to maintain a stock of 15 lengths than 30 lengths.

There is a great difference between railroads in the stock sizes of boiler studs carried. Some roads make these only as required, which is expensive; others report numerous sizes, lengths and kinds, for many of which there is very little demand. Some increase the lengths by 1/4 in., while others increase them 1/2 in. The issues of some of these lengths are very small and the discontinuance of these sizes would effect a saving in carrying charges, as well as allow space for the stock required.

Several years ago it was the practice to purchase staybolt iron in bar lengths and manufacture the staybolts as required, little if any stock being carried by the stores. With the present trend toward the purchase and stocking of drilled or hollow bolts, there has been a tremendous increase in stock, as there are from 8 to 25 different lengths in the same diameter. Some roads are purchasing these cut in lengths increasing by half inches, while others purchase in inch lengths only. After considering the consumption, a committee of Division VI, in its last report, recommended stocking only in inch lengths. Similar action could be taken with flexible bolts now being purchased by a number of roads. The upset end can be lengthened sufficiently to allow a 50 per cent reduction in lengths carried, and while there would be a slight loss in cutting, it would be overcome by a better stock of the lengths left, and still allow a reduction in the total value of the material carried. It would be surprising to most railroads to know the quantity of stock taking up room on their shelves or platforms which could be standardized.

While it is true that great savings can be made by the roads individually, there are numerous articles that require concerted action on the part of the majority of the roads. This might result in a compromise to some extent by some roads, but the adoption of the 4-ft. 8½-in. gage for track was a compromise.

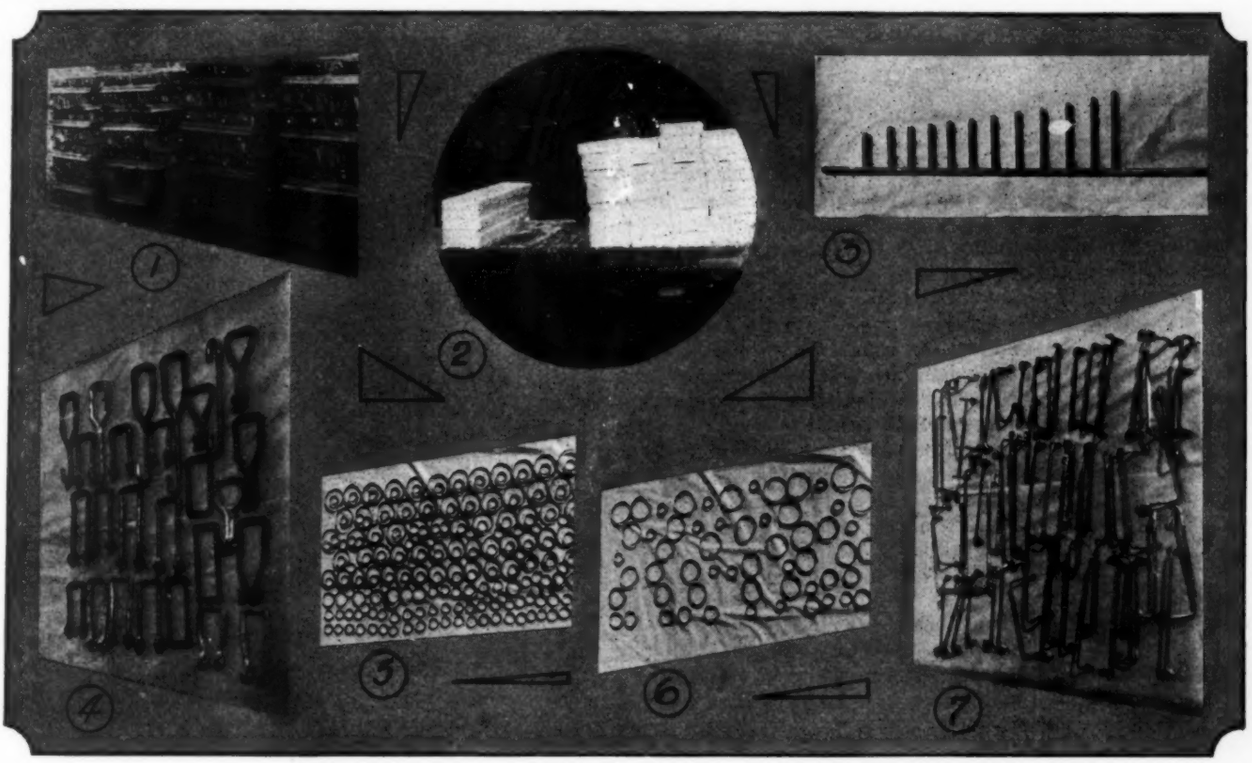
Fifty-seven Varieties

Recently a track tool manufacturer reported having 57 different dies from which claw bars are formed. Each die represented an investment in materials and labor for manufacture and an overhead cost for storage, handling, etc., and the orders for claw bars covered such small quantities that the proportionate cost for setting up the machines for each order was large. This cost is borne by the railroads in their payments for claw bars, as there is no other place to include it. A claw bar is used for only one purpose—to pull spikes. It is ridiculous that for this one purpose each road should demand a separate design of claw bar. A standard claw bar has already been approved by the Roadmasters' Association. No doubt, it would be satisfactory to all section forces if put in use.

An investigation into the sizes of boiler lagging used by various Class I railroads showed that they order 57 different sizes. A committee of Division VI, A. R. A., reduced this to five different sizes, which represented 72 per cent of the total consumption. The five sizes represented nine sizes of the total number ordered, but the 52 sizes eliminated represented but 28 per cent of the total issues. We have all witnessed the cutting and fitting of boiler lagging on engines in the shops, and the numerous small pieces which are left and then ground up and used as paste. It would seem that adhering to five sizes is all that is necessary. The manufacturer could make the standard sizes at any time with the assurance of an outlet for them. The storekeeper would know that orders for boiler lagging would be filled promptly and could afford to cut the stock a little more to the inventory.

Copper Ferrule Condition Bad

An investigation indicates that no general rule is followed by the railroads in ordering copper ferrules. The result is that it is practically impossible to secure deliveries of ferrules under 60 to 90 days, and it is impossible to purchase any in the open market acceptable for locomotives. Copper ferrules are used for only one purpose. Allowing for the variations in the thickness of flue sheets, and the diameter of flues, there is not much reason for requiring many. The investigation revealed that 232 sizes were being specified by the railroads reported. Division VI, A. R. A., after analyzing the issues of various sizes and their comparative value, reduced the recommended sizes to 64. These will fit all standard flues and can be made up in advance by the ferrule maker and reduce the interval between ordering and receipt.



Samples of Standardization Work Ahead

(1) Ninety-six Different Patterns of Insulated Rail Joints and This Is Only One-eighth of the Number of Patterns Carried by Makers. (2) Railroads Buy 57 Sizes of Boiler Lagging, Shown on Right, When Five Sizes, Shown on Left, Will Meet All Needs. (3) Should Railroads Buy Staybolt Iron in Bar Form or Carry 12 Different Sizes in Stock? (4) Twenty-six Sizes of Brake Hangers Carried by One Road and None Interchangeable. (5) Representing 232 Different Kinds of Copper Ferrules Reported on Railway Stock Books. (6) Representing the 64 Varieties Recommended as Adequate. (7) A Collection of 58 Grab Irons and No Duplicates.

Another item which gives the storekeeper difficulty in estimating the requirements without surplus or shortage is copper tubing. Like copper ferrules, this cannot be purchased in the open market and it is necessary to wait for delivery from 60 to 90 days. If some unforeseen program is started, requiring heavy issues, the regular maintenance stock is exhausted and the program is delayed until further deliveries can be obtained. Representative railroads have reported a total of 204 sizes carried in stock in ¼-in. to 3-in. diameters, and of various thicknesses, and the information collected also indicates the use of several different gages, some of which were never intended to be used in ordering tubing. Possibly some railroads are purchasing too light tubing and causing too frequent replacements. Others have let the pendulum swing the other way and are purchasing tubing entirely too heavy and wasting money in another way. After carefully considering the issues of the various roads and the conditions under which tubing is used, Division VI recommended 34 sizes. Adherence to this list by the majority of the roads would undoubtedly react to their benefit in better deliveries and perhaps in better prices. Certainly the manufacturers should be in a position to quote better prices, when they are not required to roll so many different sizes and thicknesses of wall. In adopting the recommendations of the committee, the railroads will all make their orders to the same gage, which will facilitate the filing of orders by manufacturers.

While the total value of sheet copper and sheet brass purchased is small in comparison to the total, there is an opportunity for savings by all railroads purchasing the same items and allowing the mills to roll them in advance. This will also allow wholesalers to stock the items to take care of emergency orders and to fill orders for small lines requiring a limited quantity.

Over 700 Different Rail Joints

One of the manufacturers of insulated joints recently reported having 790 different insulated joints. It is impossible, with this variation in sizes, for the manufacturer to take care of orders, and roads must wait until orders are received by the mill, rolled and finished. Because of the vast number of sections of old rail still in service with different punchings, it is unlikely that anything can be done to overcome the practices of the past, but with all the new rail being purchased each year, a standard section and drilling will solve some of the problems of the future, and allow insulated joint

makers to furnish the same size joint for each section of rail.

It is always necessary to await the manufacture of frogs, switch points, guard rails, and in fact all switch material, as all of it is usually made to the blue prints of the individual railroads. The turnouts on most of the roads are the same and there should be an opportunity for the railroads to agree on a style of switch which could be made up by the manufacturer on a production basis and allow for quicker deliveries and better prices.

The items that can profitably checked and standardized are as numerous as the number of items in stock. There is always an opportunity to consolidate or eliminate and concerted action by all the railroads would quickly show results in better deliveries and lower prices.

Thirty Names for One Casting

Another way in which standardization would be of assistance is in naming articles. Manufacturers are frequently puzzled as to just what is required because of the various descriptions used. One manufacturer's index gives 30 different names for the same freight car casting. Recently a requisition reached a general store for 12 switch lamps. Inquiry as to the color lenses required developed that the requirement was 12 switchmen's lanterns. In making up standards care should also be taken to see that gages are specified correctly. A great many items are ordered under one gage reference, while the manufacturer uses another.

A careful check of parts for various mechanical and roadway appliances will permit the elimination of many items carried as regular stock, such as cotters, nuts, cap and set screws, etc. Moreover, identical items are often furnished by two different manufacturers for their product. There is no profit in carrying the same article in two places, and stock books or records should be cross-indexed, showing both descriptions so that purchasing may be done to the best advantage. Catalogs of the various manufacturers should be studied and interchangeable repair parts of their machines carried only in one place.

Save $15,000,000 a Year

While it is not possible to state exactly what savings will be effected by standardization, it is sufficient to be exceedingly worth while. It will not only be reflected in reductions in the number of items to be purchased, but also in better deliveries and in storehouse space. It is estimated that a 10 per cent saving on the purchases of any item investigated is possible. One railroad claims to have saved an investment of $43,000 on steel car parts alone by a systematic study based on normal quantities previously carried as compared to present stocks. Another road also announced that between 1922 and 1925, the number of items of steel and iron bars, plates, shapes and sheets was reduced 59 per cent, although purchases increased 25.5 per cent in money value during this period, and the average purchases per item in the class of material considered increased 205 per cent in money value. It is not known exactly whether or not this affected the price per pound, but it materially reduced the cost attendant on ordering and accounting for the material, as well as the space for its storage. For an average railroad, the saving might run $500,000 or more annually, and for the railways as a whole, it would be $10,000,000 to $15,000,000 annually, depending on how fast standardization is carried forward.

To standardize properly, organization is desirable. This organization should be flexible and easily controlled. On a railroad with revenues of $50,000,000 or more annually, one man should be at the head of the standardization program, with assistance from the various departments using the materials. In analyzing the lumber stocks, representatives of the car and locomotive departments should be included; on bridge and building lumber, representatives of the engineer of buildings and engineer of bridges; on bar iron and forgings, the blacksmiths would serve on the committee, etc. The head of the committee will find items which can be analyzed and disposed of without referring to any committee as, for instance, duplicate parts.

The committees in the various sections of the American Railway Association and in the engineering roadmasters' and general formens' associations, etc. should be considered where joint action of the railways is necessary. Their work has been of inestimable benefit, but the effects do not reach as far as they should. The committees do not have the time to analyze many items and in many cases their reports and conclusions do not reach the proper persons to initiate the new standards.

The benefits are great enough to have a person or committee working on standards continually, either initiating items that would be of assistance to all lines, or working on items suggested by member roads. This representative or committee could be a part of the A. R. A. forces. The duty would be to ascertain what sizes and kinds of material are used, analyze them, and convert them to a common standard, have them sent out for criticism or approval to the proper officers of the railroad, and arrange to have them ordered as standards by the various roads accepting them. Not all the roads will accept the recommendations made. In that event, they can continue to purchase the material in their own way and likewise be waiting for deliveries as before and pay the extra prices. The railways using the standard items will be assured of getting them, and as they will be the standards of the majority, they will get quick delivery and secure all the advantages of quantity production.

* * *

Model of the New Canadian Pacific Hotel, "the Royal York," to Be Built at Toronto

The Yard at Winnipeg, Man., with the Passenger Station in the Foreground

Moving the Canadian Grain Crop

Canadian National handles large movement promptly and aids development of new producing areas

Part III

FROM the start of the 1927 crop movement to the close of navigation, the Canadian National handled 80,400 cars of grain. During the ten day period ending October 31, 12,306 cars were handled, while in the week ending November 14, 8,764 were moved.

Since it was amalgamated into a consolidated system, the Canadian National has played a major part in the opening up of new grain producing areas. This is indicated by the fact that this railway now has a mileage of 8,558 miles in the prairie provinces. This includes 2,367 miles in the province of Manitoba, west of Winnipeg, of which 209 miles are main line; 4,015 miles in Saskatchewan, of which 409 miles are main line and 2,156 miles in Alberta, of which 418 miles are main line. The accompanying map shows in detail the network of branches built by the Canadian National to serve the grain producing areas and to develop new farming territory. All of this mileage has been built in the last two decades, and the Canadian National, as a consolidated organization, did not participate in the grain handling until comparatively recently. The roads now constituting the government railways did not serve the territory west of Winnipeg to any great extent until the Canadian Northern and the Grand Trunk Pacific completed their extensions to the Pacific coast between 1912 and 1915, the former to Vancouver and the latter to Prince Rupert.

The following table shows the movement by crop years since the Canadian National was organized:

September 1, 1922, to July 31, 1923	125,349 cars
August 1, 1923, to July 1, 1924	170,596 cars
August 1, 1924, to July 31, 1925	94,108 cars
August 1, 1925, to July 31, 1926	160,727 cars
August 1, 1926, to July 31, 1927	138,374 cars

There are 1,500 grain loading stations on the western lines of the Canadian National, with 2,000 elevators, the capacity of the country elevators being 69,000,000 bushels. The problem of supplying these elevators and loading stations with empty box cars suitable for grain

The Canadian National Yard at Transcona, Man.

loading is one that requires considerable advance preparation. Loaded cars moving into the grain producing territory for some months in advance of the grain season are permitted to remain there after being unloaded, in order that they may be available when the grain is shipped. In addition, a large number of empty cars are stored at various places along the line. This storage is facilitated by the use of tracks not ordinarily in service, in places where duplicate facilities were provided by the Grand Trunk Pacific and the Canadian Northern. During the 90 days when the grain movement is at its height, the Canadian National distributes an average of between 50,000 and 80,000 empty box cars for grain loading alone. Distribution centers are established throughout the prairie provinces from which the empty cars are sent to the loading stations. In addition to the equipment available on the western lines, which amounts to some 37,000 cars, the eastern lines sent out between 10,000 and 12,000 cars last year to aid in meeting the demand.

For some months previous to the beginning of the grain season, the mechanical department puts on an additional force of car repairers who are kept busy putting all available cars in such shape that they will not be required to enter the shop during the period of heavy movement, but will continue in the service between the wheat fields and the head of the lakes, during the entire season, with only the required safety inspection.

Similarly, the mechanical department devotes its attention to putting the available locomotives in such shape that the majority of them will be able to run through the grain season with only enginehouse attention. The available supply of locomotives on the western region was augmented last year by the transfer of 47 locomotives from the eastern region.

In 1927, it was necessary for the Canadian National to purchase 280,000 sections of new grain doors, to supplement the 185,000 grain doors remaining from the previous year. A large recoopering plant is maintained at Port Arthur for the salvaging of grain doors and it is only necessary to replenish about one-half the entire supply of grain doors necessary to protect the movement.

Extra Man-Power

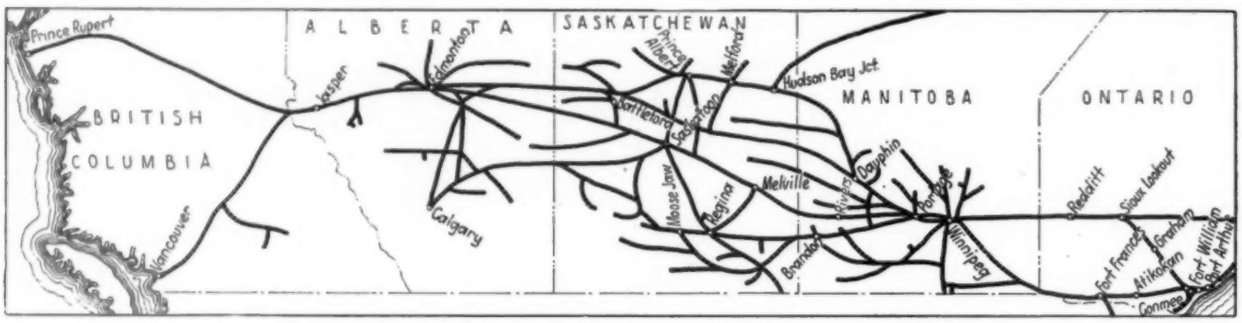
In order that this increased business might be handled properly, the Canadian National employed 2,103 additional men in engine, train and station service during the 1927 season. The following table gives the comparative figures:

	July	November
Enginemen:		
Road	1,336	2,058
Yard	348	528
Trainmen:		
Road	1,641	2,309
Yard	542	849
Station Staffs:	2,516	2,742
	6,383	8,486

In addition, the mechanical forces are increased, telegraph operators are promoted to extra dispatchers and assistant agents who are qualified telegraphers are promoted to those positions.

When the Canadian National began to handle large quantities of grain, it was necessary to employ whatever labor was available. In recent years, however, steps have been taken to insure a more permanent and trustworthy force. Men residing in the various cities and towns along the line are given preference to migratory labor. In the sections of Canada where the development is relatively new, there are more men engaged in seasonal occupations than is the case in older communities. This provides the railway with a source of man-power, which has been developed so that a reasonable emergency force of experienced men is readily available. Each year some of these men obtain permanent occupations in other industries, but a sufficient number of new men is taken on to complete the force. There is always a sufficient nucleus returning from the previous year upon which to build a satisfactory force.

When the grain begins to move, the daily situation in the wheat fields is made known to the general operating officers in Winnipeg by means of a detailed car report and a grain report, which show the amount of grain marketed each day, the number of cars loaded for the east and for the west, the number of empties on hand available for grain, the number of cars required, the amount of grain in storage, the number of grain doors on hand and the capacity of the elevators at the various stations. These reports, supplemented by the personal observation of various members of the staff, give the general operating officers a complete picture of the situation daily and they are able to take steps to see that continuous flow of the movement is uninterrupted.



Map Showing the Canadian National Lines Serving the Prairie Provinces.

On the various divisions, the crews are assigned in such a manner as to be able to deliver the empties at the country elevators and take out the loads to the various concentration points without delay. All westbound grain is concentrated at Edmonton and made up into solid trains there for movement to Vancouver and to Prince Rupert. These trains move west to Jasper, Alberta, over the same route, at which point the cars intended for movement to Prince Rupert leave the main line to follow the old line of the Grand Trunk Pacific to the Coast. Cars intended for movement eastbound, the larger proportion of which go to Fort William and Port Arthur, are gathered at the various divisional concentration points. From there, they are sent in solid trains to the western terminals of the Portage division.

There are three principal grain-handling lines entering Winnipeg from the west. These lines are all single-track and meet at Portage La Prairie, 54.3 miles west of Winnipeg. From this point to Winnipeg there are two single-track lines, situated adjacent to each other for most of the distance, and operated as double-track. Since the Portage division comprises the main line and

branches directly west of Winnipeg, it receives the entire movement of east-bound grain from the western divisions. The western terminals of the three lines comprising the major portion of the Portage division are at Brandon, Man., Rivers and Dauphin, 134.5, 142.2 and 177.3 miles west of Winnipeg respectively. Depending upon the territory in which it originates, the grain moves into these three terminals for final consolidation before reaching Winnipeg.

The Canadian National has two lines from Winnipeg to the lake ports, which are described in detail later, the western terminal for the south line being Fort Rouge yard at Winnipeg, and for the north line, Transcona yard, 7.1 miles east of Winnipeg. Both of these lines are under the jurisdiction of the superintendent of the Port Arthur division. The movement is divided between these two lines according to their capacity and cars from the Portage division are delivered to Transcona or Fort Rouge as directed by the officers of the Port Arthur division. To facilitate communication between the Portage division and the Port Arthur division, the dispatchers' offices of the two divisions are situated side by side in the general office building at Winnipeg. This enables the chief dispatchers of the two divisions to work in unison and this co-operation has had much to do with preventing congestion in the Winnipeg terminals.

Under the normal arrangement, trains from Dauphin and Brandon are delivered to the Port Arthur division at Fort Rouge yard, while trains from Rivers run through to Transcona yard. By this means, the trains from the more distant terminals (Dauphin, 177.3 miles, and Brandon, 134.5 miles) are spared the necessity of the additional seven-mile haul to Transcona yard. Conditions on one or the other of the two lines east of Winnipeg, however, sometimes cause readjustments in this plan. The south line may reach its capacity, in which case all trains from the Portage division are operated through to Transcona. If the reverse is true, all trains are stopped at Fort Rouge until the normal operations are resumed again.

Fort Rouge and Transcona are both flat yards and relatively little classification is given the grain cars there, except to cut out, at Fort Rouge, all cars intended for Winnipeg proper.

Port Arthur Division Operations

The two single-track lines from Winnipeg to Port Arthur are under the jurisdiction of the superintendent of the Port Arthur division, whose headquarters are at Port Arthur, Ont. The north line follows the northern main line from Winnipeg to Sioux Lookout, Ont., thence over a branch line to Conmee, Ont., where it joins the south line. The division is double-track from Conmee to Port Arthur, 35.9 miles. The south line follows the southern main line, south of the Lake of the Woods, through a small portion of Minnesota, thence along the north shore of the Rainy River (the international boundary) through Rainy River, Ont., and Fort Frances to Conmee.

For the purposes of operation, the Port Arthur division is divided into nine sub-divisions, two of which are not concerned in the movement of grain from Winnipeg to the Lake ports. The north line consists of four subdivisions, as follows:

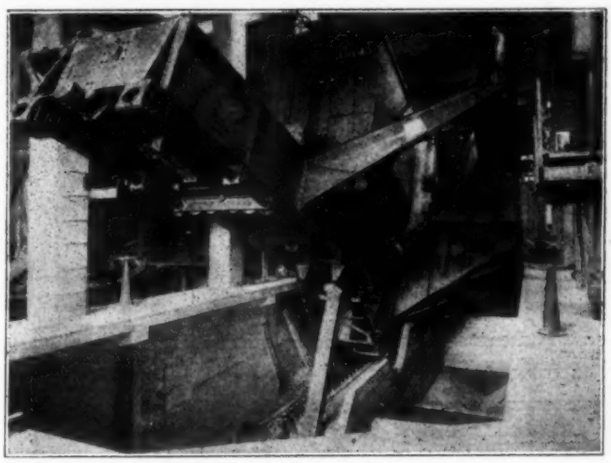
Minaki	Transcona to Redditt	121.8 miles
Quibell	Redditt to Sioux Lookout	123.2 miles
Quorn	Sioux Lookout to Graham	88.7 miles
Raith	Graham to Conmee	70.8 miles

The south line comprises three sub-divisions, as follows:

Sprague	Paddington to Rainy River	147.7 miles
Fort Frances	Rainy River to Atikokan	143.2 miles
Kashabowie	Atikokan to Twin City Junction	129.1 miles

The Quibell and Minaki sub-divisions are in charge of an assistant superintendent located at Sioux Lookout; the Quorn, Raith and Kashabowie sub-divisions are in charge of another assistant superintendent at Port Arthur, Ont., while the Sprague and Fort Frances subdivisions are supervised by a third assistant superintendent with headquarters at Rainy River, Ont.

The normal movement over the north line between Transcona and Sioux Lookout is some three freight trains per day in each direction, the normal on the south line between Winnipeg and the head of the lake is also about three trains per day in each direction, while only three mixed trains per week are operated in each direction over the branch between Sioux Lookout and Conmee. During the grain season, however, it is necessary to handle some 12 or more trains in each direction over each of these lines daily, including the branch. This requires a material increase in the dispatching force. Dispatchers' offices are established at Sioux Lookout on the north line and at Rainy River on the south line to take care of the extra work. These offices are manned by complete forces consisting of a chief dispatcher, three trick dispatchers and one extra dispatcher at each location.



The Grain Car Unloader in Operation

On the Port Arthur division, as on other divisions where through grain movement takes place, the loaded trains eastbound are scheduled to facilitate their dispatch, by making them superior by class as well as by direction over the empty trains westbound. This also enables them to be handled by wait orders and "run-lates" to a large extent.

The following check of the train sheets of the Quibell sub-division, between Sioux Lookout and Redditt, 123.2 miles, on the north line, on October 20, will give an idea of the dispatching performance required. The normal movement on this sub-division averages about three trains per day in each direction. Two important transcontinental passenger trains and one through manifest freight train in each direction are operated over this particular sub-division, and, on the day in question, a second section of one of the passenger trains was also run. The regular passenger schedule provides for a run of 3 hr. 40 min. for one of the trains and 4 hr. for the other, westbound, and 3 hr. 40 min. and 3 hr. 50 min. respectively eastbound.

The manifest freight is scheduled to go over the subdivision in 5 hr. 50 min., and the way freight in 8 hr. 20 min., while the schedules under which the grain trains are moved provide for 7 hr. 25 min., 7 hr. 45 min., 7 hr. 55 min., and 8 hr. 5 min.

In order that the physical characteristics of the line

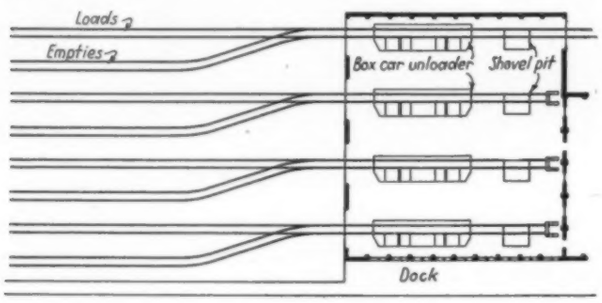
may be understood, the station order, distances and track capacities are given in Table 1.

It should also be understood that on this subdivision, as elsewhere in Canada, the 24-hour system for scheduling and dispatching trains is employed.

Table 1—Quibell Sub-division *

Stations	Car Capacity of Passing Tracks	Stations	Car Capacity of Passing Tracks
Terminal	27	Hunter	153
1.0		7.7	
Pelican	88	Morgan	75
5.1		9.1	
North Pines	67	Quibell	76
8.2		8.8	
Hudson	75	McIntosh	75
6.9		6.7	
Webster	73	Canyon	75
4.4		9.2	
Taggart	75	Favel	75
7.4		6.7	
Sunstrum	75	Jones	74
6.0		7.4	
Milledge	76	Farlane	76
5.4		4.9	
Richan	70	Brinka	75
7.0		4.8	
Amesdale	73	Redditt	124

* Note: Coaling stations are at Sioux Lookout, Hunter and Redditt; water stations at Sioux Lookout, Webster, Milledge, McIntosh, Jones and Redditt.



Typical Track Layout at a Terminal Elevator

Selecting from the large number of trains at random, the following performances are interesting:

Eastbound

Train No.	Left Redditt	Arrived Sioux Lookout	Elapsed Time
214	9:15	15:50	6' 35"
734	2:25	10:10	7' 45"
404—Manifest	8:55	14:25	5' 30"
1/736	10:45	16:30	5' 45"
2/736	16:10	23:00	5' 50"

Westbound

Train No.	Left Sioux Lookout	Arrived Redditt	Elapsed Time
X—3556	19:25	2:30	7' 05"
X—5262	18:20	24:10	5' 50"
X—3305	16:35	23:05	5' 30"
X—2551	3:15	8:10	4' 55"
X—3387	1:00	5:45	4' 45"

A detailed check of another train, which made the run in 5 hr. 35 min. is given below:

Left Redditt	8:30		
By Farlane	8:58		
Jones	9:25	9:38	Water
By McIntosh	10:21		
By Quibell	10:36		
Hunter	11:06	11:20	Coal and water
By Milledge	12:10		
Taggart	12:45	13:00	Meeting passenger train
By Hudson	13:32		
Arr. Sioux Lookout	14:05		

On the connecting branch from Sioux Lookout to Conmee, the normal traffic of which is only three mixed trains in each direction per week, ample facilities have been built to take care of the grain movement. This branch, which is 159.5 miles long, in addition to coal and water stations at each end, has three intermediate coaling stations and nine water stations. It has 17 passing tracks, averaging 85 cars capacity, the shortest track having a capacity of 71 cars, the longest 160 cars.

The lake ports terminal district at Port Arthur and Fort William and the line as far west as Twin City Junction, 12 miles, is operated as a separate division, known as the Lakehead division, under the jurisdiction of a superintendent whose headquarters are at Fort William.

The elevators served by the Canadian National only at the lake terminals have a capacity of 13,460,000 bushels, while the capacity of those served jointly is 41,250,000 bushels, or a total present capacity at the elevators served of 54,710,000 bushels, out of a total present capacity of 72,590,000 bushels, with an additional 11,900,000 bushels representing elevators under construction. All cars from both lines are brought into the new gravity classification yard at Neebing, 8.5 miles west of Port Arthur, where they are separated into groups in accordance with the elevators to which they are consigned. The facilities at Neebing consist of a receiving yard of 10 tracks with a total capacity of 810 cars, a classification yard, of 25 tracks, with a capacity of 1,450 cars and a departure yard of 13 tracks, with a capacity of 1,100 cars. Twenty-eight classifications are made at this yard.

The cuts made on the hump averaged 72 per cent of the total cars put over the hump so far this year. In one day, near the close of the season, when the weather was bitterly cold, one engine, 25 car riders and 5 switch tenders, humped 1,184 cars with 858 cuts between 7:30 and 22:15 o'clock. This is an average of 80.2 cars per hour. On another occasion, 166 cars were humped in 62 min., an average of 2.68 cars per minute, or a car over the hump every 22.4 sec. for the entire period.

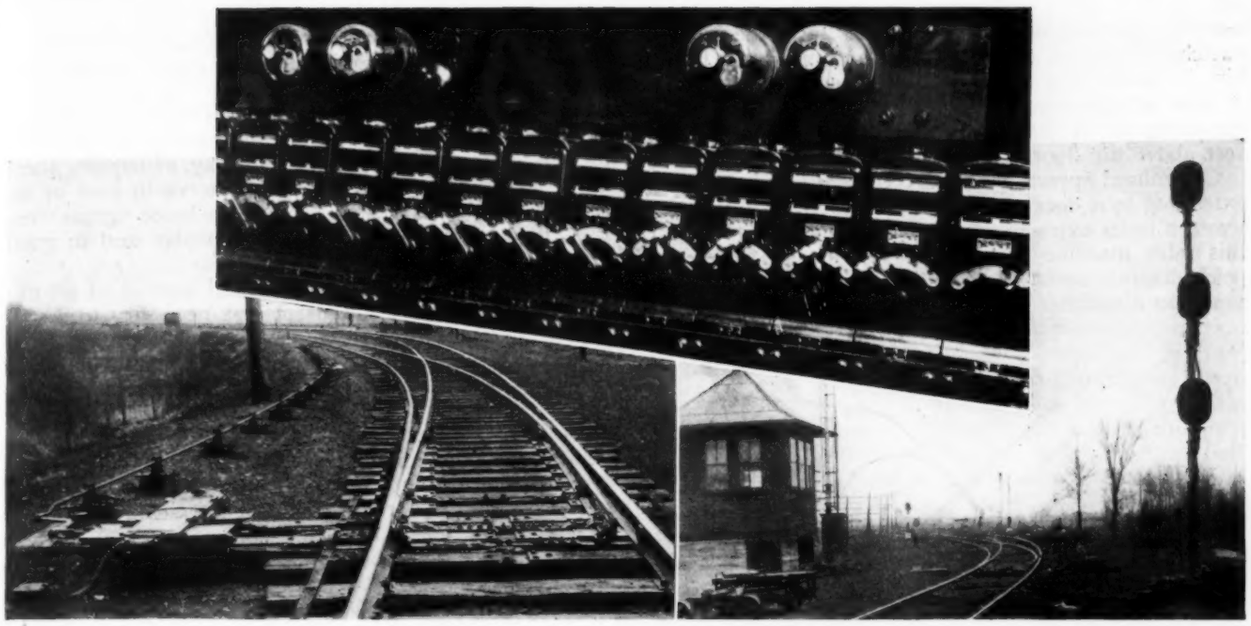
The Canadian National elevator at Port Arthur, now operated by private lessees, is one of the largest grain handling plants in the world, having a storage capacity of over 7,500,000 bushels. One of the interesting labor-saving devices employed is an automatic grain car unloader, which consists of a tilting platform with auxiliary mechanisms for opening the grain door and introducing deflecting baffles into the car. As the car is tipped endwise, the grain content is discharged by gravity through the side door into the elevator receiving hopper.

The tipping machinery consists of a 75 h.p. motor connected through a worm gear and differential to a ram at each end of the bridge, by which means the bridge may be rocked to an angle of 45 deg. in either direction.

The time of the various operations involved in unloading a grain car is as follows:

Raising end bumpers and centering car on platform	40 sec.
Drawing end pins	10 sec.
Breaking in and raising car door	15 sec.
Tipping cradle to the left without baffle	20 sec.
Inserting right baffle and tipping cradle to the right	40 sec.
Withdrawing right baffle, inserting left baffle and tipping cradle to the left	50 sec.
Withdrawing left baffle and leveling car	10 sec.
Withdrawing door breaker	12 sec.
Inserting end pins	10 sec.
Dropping end bumpers and inspecting interior of car	30 sec.
Complete operation	237 sec.

The ideal arrangement for operating purposes is a through track layout at the elevators. But the layout is determined largely by the site of the elevator. The accompanying diagram shows the layout at an elevator where through tracks were not possible. The unloading shed is at the shore end of the workhouse, and the loaded and empty tracks are side by side. At the elevator in question, each yard track has a capacity of 30 cars. A spring switch at the dumper is open to the empty track, and the track is graded so that empty cars run off the dumper and clear themselves by gravity. Loaded cars are pulled to the dumper by means of endless cable haulage, which controls the entire yard. Specially designed cable grips are used for attaching the cars to the moving cable. The layout permits loaded cars to be set into the elevator yard and empty cars removed, without interruption to the unloading operation.



Left—Remote Power Switch Machine. Right—Looking North Past New Tower. Above—Desk Lever Machine in Tower

Burlington Saves $16,200 a Year by Consolidating Interlockers

Four mechanical plants and nine operators relieved by installation of low-voltage remote control facilities at West Quincy, Mo.

A TOTAL saving in operators' wages and maintenance supplies amounting to $16,200 annually has been effected by the consolidation of four mechanical interlockers into one low-voltage remote control plant on the Chicago, Burlington & Quincy at West Quincy, Mo. The present facilities cost $54,300 and are operated by the dispatchers who are now located in the interlocking tower, thus dispensing with the services of nine telegraph operators who were used formerly as levermen in three of the four mechanical interlockers. An annual operating saving of 30 per cent of the total cost of the new facilities is thus being realized. While there has been some additional saving because of the speedier handling of train movements, no definite values have been placed on this.

No train orders are issued to govern train movements within this remote-control territory and this, together with the operation of the plant by the train dispatcher, lends particular interest to this installation for it has several features in common with the recent development of dispatcher-controlled signal systems. Operation of the interlocker has in no way interfered with the manifold duties of the dispatcher, whose territory embraces the single-track main line from Burlington, Iowa to Hannibal, Mo., 101 miles, and a branch line running from Keokuk, Iowa to Mt. Pleasant, 49 miles. The dispatcher was formerly located at Hannibal, 18 miles south of West Quincy.

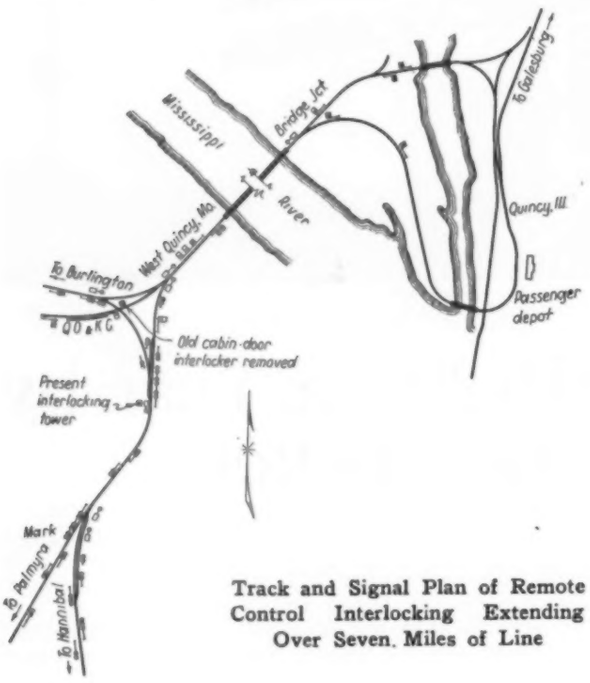
Owing to the track arrangement at West Quincy, Mo., and Quincy, Ill., on the other side of the Mississippi river, it is necessary for all passenger trains running via Quincy to pass through the West Quincy interlocking plant twice. It will be seen from the track plan that trains running between Burlington, Iowa and St. Louis, Mo. via Hannibal are operated over the single-track drawbridge into the Quincy station, and returned over the other side of the Quincy loop to the West Quincy interlocker; similarly all trains from the Kansas City line headed for Burlington, enter the interlocking plant at Mark and loop into Quincy over the single-track draw. This plant also handles all traffic from Galesburg destined for St. Louis, Kansas City or points west and south of Quincy. West Quincy, Mo., is also the eastern terminus of the Quincy, Omaha & Kansas City, a subsidiary of the Burlington but operated independently. Traffic on the latter line is light, amounting to only two trains a day.

An old cabin-door mechanical interlocker had been used formerly to protect the Q. O. & K. C. crossing; another mechanical plant had been in service at Mark to control the junction of the Kansas City and St. Louis lines; another had been in service at Bridge Junction, on the east side of the river, to control the signaling in connection with the operation of the Mississippi River drawbridge and a third mechanical plant had been in service at West Quincy to control the Q. O. & K. C. junction and the junction of the Burlington line and the line to Kansas City and St. Louis. The cabin-door plant was operated by trainmen but an operator was on duty at each of the three other plants during each trick. All of the mechanical interlocking equipment at these four plants was replaced by power-operated switch machines and signals, the control being concentrated in one set of 17 table levers in a tower at a central point.

The frame building which housed the cabin door interlocker at the Q. O. & K. C. crossing was moved to the west junction of the Kansas City and Burlington lines. The dispatcher who operates this plant, when

seated at his desk on the second floor, faces the junction switch in front of the tower, while immediately behind him is located the 17-lever table interlocking machine. A neat arrangement of table-lever units is secured by mounting all of them on a cast-iron bench about two feet above the floor.

Centralized operation of this comparatively large plant, extending as it does nearly seven miles from its extreme western to its extreme eastern limits is made possible by this table machine in conjunction with an illuminated track diagram mounted above it. By means of this diagram the dispatcher is able to follow the operation of any



Track and Signal Plan of Remote Control Interlocking Extending Over Seven Miles of Line

train through the interlocking plant and to check the position of all signals. Normally, none of the diagram lights are energized, but the presence of a train in any of the track circuits will light up the respective lamp located in the center of that particular track circuit. Whenever a signal is cleared, a green light so indicates. Four clockwork time releases provide for the changing of any route when, for some reason or other, the dispatcher finds it necessary. A single-stroke bell is mounted on the board beneath the track diagram and functions as an annunciator for eastbound trains approaching Mark.

On a shelf, immediately in front of the dispatcher, is mounted a lock controller and indicator by means of which the dispatcher is enabled to lock the operating control of the Mississippi River drawbridge. This controller effects the necessary interlocking protection between the bridge-operating machinery and the low-voltage interlocker at West Quincy. Once the bridge is unlocked, the dispatcher cannot clear any conflicting signals or remove any of the derails until the bridge operator gives him an "unlock." Similarly the bridge operator can do nothing until the dispatcher gives the bridge operator an "unlock."

Outside Equipment Power Operated

The operating facilities outside of the tower comprise the signals, the switch machines for switch and derail operation, and the aerial cable and parkway cable distribution system, together with the necessary control relays and batteries. The new signals are two-indication (green and red) color-light type. At the junction, three of these two-indication units are mounted vertically, or a total of six lamps on one home signal. The dwarf signals provide two indications, purple and red. The lamps in both the home and dwarf signals are 18-watt, 10-volt size and are lighted continuously by alternating current with the provision, through a power-off relay, of burning them on direct current storage battery reserve in case of an a-c. power failure. Several semaphore home signals were used because the equipment was available and in good operating condition.

To effect the power operation and control of all important switches and derails, it was necessary to install 14 low-voltage switch machines. When operating from a 20-volt storage battery, one of these machines will operate a switch from full normal to full reverse or vice-versa in a period of 12 to 15 sec. Where a switch machine is installed at the end of a passing track, it is pipe-connected to the derail on the passing track. No derails are provided on any of the main-line tracks, except of course at the drawbridge, where it is essential that they be retained. There is also a split-point derail on the Q. O. & K. C. north of the crossing with the Burlington line. This, however, is not a main-line derail as the traffic on this line consists normally of only two trains a day.

The main low-voltage battery is housed in the first floor of the tower and comprises five cells of Exide KXH-7, 80-amp. hr. capacity. These cells are under continuous charge by means of Balkite electrolytic rectifiers. Similarly, the operating battery for each switch machine is float-charged from a rectifier. The same charging arrangement is used at the signals, although the color-light signals are normally operated on alternating current. Where power is available for charging, storage batteries are used on track circuits, while on the outlying sections primary battery is used for track circuits.

Electric Switch Lock Installed

At the east end of the short passing track at West Quincy, it was found advisable to install an electric switch lock and leave this as a manually operated switch instead of installing a power switch machine.

A switch lock controller and indicator are mounted on the board above the interlocking levers in the dispatcher's office. This controller is connected with the electric switch lock on the manually-operated switch mentioned above. When it is desired to operate the switch, it is necessary that the dispatcher first unlock it by means of his locking controller and indicator. When he unlocks the switch an indication is received at the switch lock by means of a miniature semaphore indicator as in the ordinary switch type indicator. The trainman then reverses the mechanical unlocking lever on the device and this releases the hand control switch throw mechanism.

Automatic Crossing Protection Also Provided at Bridge Junction

There is an important highway crossing at Bridge Junction because the Mississippi River drawbridge is used for both railroad and highway traffic, although it is owned by the Burlington. Crossing gates were formerly in service to protect this crossing and these were operated by the Bridge Junction towermen. At the time the Bridge Junction mechanical plant was dismantled, permission was obtained from the local authorities at Quincy to substitute automatic flashing signals at these crossings.

The color-light signals, power-switch machines, table-lever interlocker and special switch-lock used on this plant were manufactured by the General Railway Signal Company, while the installation was planned and the equipment installed by the signal forces of the Burlington.

All-Steel Passenger Cars Shipped to Brazil

Twenty-two coaches ordered by the Paulista to replace wood equipment in through train service

ON March 16, 1928, the American Car & Foundry Export Company made a shipment of 22 all-steel passenger cars on board the S. S. Belpareil from the Commissioners' Dock, Wilmington, Del., to the harbor of Sao Paulo, Brazil, where they go at once into service on the Paulista Railway Company, one of the most modern roads in South America. This is the first all-steel passenger equipment installed on South American railways.

Up to April, 1926, the standards of the railroad had been all-wood cars and some cars having steel underframes and wood superstructures built principally by European car manufacturers. The management of the railroad decided to purchase all-steel equipment to reduce to a minimum accidents from wrecks, fires and consequent loss of life.

During the fall of 1926, the Paulista placed an order with the American Car & Foundry for seven first-class coaches, six second-class coaches, three parlor cars, two dining cars, two mail cars and two baggage cars. These cars were built at the Berwick, Pa., works of the American Car & Foundry Company, and the train complete was run to the company's yards at Wilmington, Del., from whence it was shipped to Brazil.

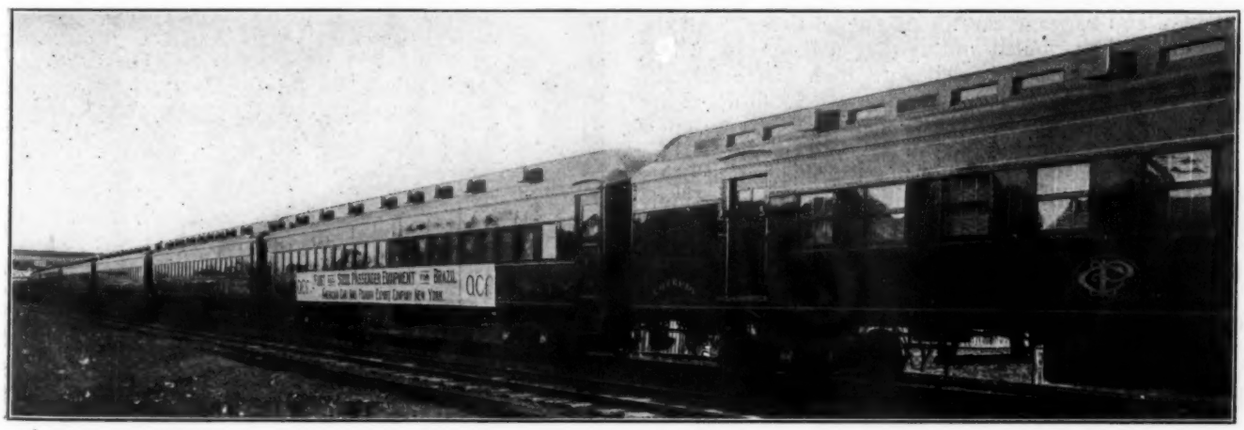
Similar in Construction to Cars Operating In This Country

The cars are of all-steel construction throughout and conform in all essentials to cars operating on the principal railroads of the United States. The only variations are the gage of track, type of couplers, buffers and brakes, which items, of course, are constructed to meet the railway company's standard requirements. The gage is 5 ft. 3 in. The couplers are a transition type consisting of an automatic head hinged so as to drop down out of the way when a hook housed within the coupler head is used with the railway's present screw type of coupling. The American standard central buffing arrangement is provided for use with automatic couplers. Side buffers, hinged to drop down out of the way when not in use, are provided to operate in conjunction with the screw type couplings. The reason for providing two types of couplings and buffing arrangements is that the railway is now in the transition period and is gradually changing to the exclusive use of automatic couplers of the vertical plane type used in North America.

Vacuum brakes of European manufacture are provided and the foundation rigging is so arranged that automatic air brakes of a type similar to those used in this country may later be applied with the least possible change of details.

Interior of the Parlor Car

The coaches and parlor cars are 70 ft. long over the body corner posts and 79 ft. 5⅞ in. over the buffer face plates. The first-class coaches have a seating capacity of 80, second-class coaches 98, and the parlor cars 18 in the main compartment and 6 each in a reserved compartment at one end of the car and a smoking compartment at the other end. Seats in the first-class coaches



All-Steel Passenger Train, the First Shipped to South America, for Service on the Paulista Railway, Brazil

are of the reversible type, rattan covered, seating two passengers each. The seats in the second-class coaches are of the reversible wood slat type, seating three passengers each on one side of the aisle and two each on the other.

The parlor cars are provided with leather-covered revolving chairs in the main compartment and movable chairs and stationary seats covered with the same kind of leather in the two end compartments.

Dining Cars

The dining cars are 78 ft. 8 in. long over the body frame and 82 ft. ⅞ in. over the buffer face plates. The seating capacity is 36. The conventional pantry and kitchen equipment as well as buffets, refrigerators, lockers and cabinets, etc., as used on American dining cars, are provided.

The postal and baggage cars are 60 ft, 9½ in. long over the body frames and 64 ft. 2⅜ in. over the buffer face plates. The postal cars are provided with railway mail service standard equipment as specified for full 60-ft. cars. The baggage cars have two 6-ft doors on either side and a separate conductor's compartment in either end.

The Dining Cars Each Seat 36 Persons

Special Equipment

All the passenger cars have composition floors and the mail and baggage cars double wood floors. All the cars are full vestibuled and as they will operate where all the stations are provided with high platforms, the regulation trap doors are unnecessary. Small doors are provided to uncover the steps when necessary to enter the cars when not standing at the high platforms.

Electric lights are used on all cars, generation being supplied by axle light equipment. The cars are amply provided with ventilators, electric fans and complete insulation to protect the passengers against the heat of the climate in which they will be operating.

The interior finish of all cars is of steel throughout, except the head-linings and wainscottings which are of fireproof Agasote. All cars have monitor decks and roofs which are of copper bearing steel sheets riveted in place of the roof framing members. All doors are of copper bearing steel.

All the cars are provided with conventional toilets and lavatories, including flush hoppers, wash stands and the other usual equipment used on North American railroads. Modern sanitary water coolers complete with filters and automatic shut-offs are furnished of a type having separate compartments for ice and water, together with the usual sanitary drinking cup dispensers.

The first-class coaches, the parlor car and the dining cars have six-wheel trucks and the second-class coaches, baggage and postal cars have four-wheel trucks. All trucks have clasp brakes. The wheels are 38 in. in diameter, steel-tired, built to the railway company's standards.

The interiors of the cars are attractively painted and grained to imitate jacaranda, a wood native to Brazil. The ceilings are painted white. Headlinings and frieze boards are neatly striped. Simple but effective decorations are applied to all pier panels. The exteriors of the cars are painted olive green and the railway company's monogram is applied to each side of the cars. The cars are also lettered in Portugese to indicate the respective type, various compartments, etc.

Cars to be Operated Out of Sao Paulo

The Paulista Railway reaches into the heart of the coffee district and extends from the interior, where it is fed by numerous narrow gage railroads, to the city of Sao Paulo, where it connects with the Sao Paulo Railway over whose tracks freight cars are transported to the coast at the city of Santos. Paulista passenger cars run to Sao Paulo only.

The main line of the railway over which these cars will operate is up-to-date in every respect including rock ballasted track, automatic signal devices, etc. The motive power is furnished by electric locomotives operated through overhead transmission. The present facilities, combined with the installation of these modern all-steel cars will provide passenger transportation that will be the equivalent of that furnished by the railroads in the United States.

In Order to make a delegation of Canadian farmers feel at home, the London & North Eastern provided four shoeblacks in uniform for the special train from Brandon to London. This was the first time that organized shoe cleaning on a train had been performed in England. In this connection, a strange linguistic phenomenon is brought to light. In England, where shoes are commonly referred to as boots, those who clean footwear are called shoeblacks, while here, where shoes are never called boots, members of the same craft are called bootblacks.

* * *

Wide World

Loading Passenger Cars for Brazil at A. C. F. Plant, Wilmington, Del.

Mechanical Engineers in the Railroad Industry

Railroad Division, A.S.M.E., reports that the opportunities in railroad work are as good as in other industries

ON March 14, 1928, the Sub-Committee on Professional Service, Railroad Division, A.S.M.E., presented its final report on the opportunities afforded the mechanical engineer in the railroad and railway supply industries at a joint meeting of the Metropolitan Section and student branches of the society, at New York. Delegations composed of both students and faculty members were present from practically every technical school and college in the Metropolitan area. In addition, a number of mechanical department officers and special apprentices from railroads running into New York were present and took part in the discussion of the report.

The report includes three appendices and contains considerable information in addition to that which appeared in a progress report which was presented at the annual meeting of the A.S.M.E. in December, 1926. Two of the appendices gave a list of railroads and railway supply companies with the name of the officer to whom the mechanical engineer should write relative to employment. The third appendix contains an outline of special apprentice training courses offered by twenty railroads and one supply company. An abstract of the progress report presented by this committee was published in the December 11, 1926, issue of the *Railway Age*, page 1153. Much of the material given in the progress report published in that year has been omitted in this abstract of the final report, which follows:

Report of the Railroad Division, Sub-Committee on Professional Service

It is the belief of the Railroad Division's Sub-Committee on Professional Service that the opportunities afforded the mechanical engineer in the railway and railway supply industries are equal to those afforded in any industry. This belief is based on several facts which are later discussed in this report, probably the most significant of which is that competition with other college-trained men is not as great as is the case in many other industries. A study of the careers of 150 railway officers holding positions from president down to master mechanic, show that only 43.7 per cent are college graduates. The railway supply industry, however, presents a slightly different ratio, 63.6 per cent being college graduates out of a total of 113 railway supply company officers ranging from president down to sales representatives. In both cases the officers were selected at random with the primary object of obtaining as accurate a picture as possible of the competition to be expected by the mechanical engineer in both industries: These figures are also significant of one other important factor pertaining to the success of the individual in railway and railway supply work. Knowledge of railroading, individual adaptability, practical experience and a willingness to work appear to have considerably more value in the mind of the average executive than college education.

It is not the general practice of the railroads to extend preferential consideration to college graduates. It is expected that the college graduate will start on an equal footing with the non-college man and show his worth in actual service. In other words, the college man is worth comparatively little to a railroad company until he has had considerable practical training and experience. This, in the main, is also true of most industries employing technical graduates.

If the college man entering railroad service is the type who wishes to use his engineering education as a means of possibly reaching an executive position, either in or above the engineering department, then there is one thing that cannot be overlooked—as he advances he gradually becomes more of a business man and less of an engineer. If he has failed to educate himself in the principles of business, the chances for becoming an executive are not great. The railroad executive whose duties may demand an engineering knowledge are such that a relatively small portion of the things which he must know involve a detailed knowledge of engineering principles as compared with the principles of business administration.

The mechanical department of a railroad is but a part of an immense business organization, which like any other business, is operated to make money. Unfortunately, the mechanical department is in a position principally to spend money and save money; as a consequence, the labors of the members of that department are often looked upon as "non-productive." If a college man intends to enter railroad service and be satisfied with what he can learn in any one office or department, he will make no greater progress on the railroad than if he pursued the same tactics in any other industrial organization. The big thing is to know enough about the job ahead to be able to step into it when the opportunity offers and this calls for self education in the principles of business.

The Railroad Division's Sub-Committee on Professional Service does not believe that to confer a distinctive title upon a college man in railroad service would materially better his situation. In fact, some consider such titles a considerable handicap. "Titles can be created with the flourish of a pen and wiped out with a bad breakfast." Some of the real jobs on any railroad are those which carry unimposing titles, and on the other hand, some jobs with magnificent titles leave much to be desired on pay-day. Every man who has had practical railroad experience realizes that it is desirable to emphasize his education as little as possible. What the young mechanical engineer should do, in railroad work or elsewhere, is to lose his identity as a college man as quickly as possible.

There are two principal reasons why advancement in railroad work may be slow. First, because the business as a whole is so complicated and departmentalized that it takes years of actual work to become acquainted, even in a general way, with many phases of it. This is in contrast with any line of business that consists mostly of one or two operations, such as buying and selling, or the manufacture and sale of a limited variety of articles, the whole plant being in one place. In any

such line, one with reasonable aptitude and liking for the work can much more quickly master the details of it and be in position to advance more rapidly than would be likely in a more complicated and departmentalized business. The second reason is that the railroads have long since come to a stage of routine as contrasted with immediate and rapid growth. They are organized to handle their business from day to day but are not expanding in any such manner as to call for a steady and large supply of trained men to fill newly created responsible positions. A man who may be very capable is apt to find himself in a situation similar to a bucket in a bucket brigade; that is, he passes along just as fast as those who happen to be ahead of him travel. This is an unavoidable condition in any organization that has attained its growth.

The young mechanical engineer must know and appreciate the fact that the railroad industry is subject to regulation by the government. As a rule, government agencies are slow to move and are likely to hinder the development of an industry unless they are able to keep in step with the times. The rules and regulations laid down by the Interstate Commerce Commission affect the work of all departments of a railroad and it is necessary that the railroad officer know just how these regulations relate to the work of his department. Training in the utilization of statistics and reports is a necessary qualification to the mechanical engineer in both the railroad and railroad-supply industries.

The seniority rules, it is generally admitted, slacken the rate of promotion for the college man in railroad work, but present no insurmountable barrier if superior capacity is demonstrated. The prime necessity of not impairing morale among the employees by anything savoring of favoritism is stressed very generally, although seniority, it is said, will give way to demonstrated superior capacity to fill a higher post. In other words, the burden of proof, "the risk of non-persuasion," must be arrived at by the college man who aspires to promotion in competition with the man of longer service. Among the facts the young mechanical engineer would like to know before entering the employ of any company are those relating to the manner in which promotion is gained. In other words, must he play politics; be a relative of some high officer, either through birth or marriage; or is promotion gained solely through merit? Naturally such information is practically impossible to obtain until one has been in the employ of the company for a time and has had an opportunity to discover some of the inside workings. Fortunately, the majority of the Class I railroads have such large organizations that family influence does not have much weight in obtaining promotion. In fact, a careful check of various records and statistics of the ownership and official personnel of the railroads shows that "family controlled" companies are few in number and are practically all small roads.

Conclusion

It is the belief of the Railroad Division's Sub-Committee on Professional Service that if the young mechanical engineer or mechanical engineering student is convinced that he will like railway or railway-supply work and has a special aptitude for such work he will succeed in getting ahead in either of the two allied industries. The degree of success depends largely on the characteristics and ability of the individual. This, of course, holds true for all industries as well as the railroad and railroad-supply industries. On the other hand, it is the consensus of opinion that both the railroads and the railway-supply companies need the young technical graduate, and this report would indicate that in salary* and opportunity he can hope to achieve the same degree of success as in other engineering and industrial lines. Finally, the Sub-Committee wishes to stress the value of personal investigation to ascertain the facts pertaining to the opportunities afforded in any industry he is considering entering before arriving at any final decision, or committing himself to a definite line of work.

The report was prepared by a committee under the direction of the following: Marion B. Richardson, associate editor, *Railway Age*, chairman; Eliot Sumner, superintendent motive power, Pennsylvania, vice-chairman, representing the railway industry; Robert S. McConnell, chief engineer, Baldwin Locomotive Works, vice-chairman representing the railway supply industry, and A. J. Wood, professor of mechanical engineering, Pennsylvania State College, vice-chairman representing the colleges.

New Calculator for Railway Use

A NEW calculating machine designed to meet the requirements of railroads and public utilities for a low priced machine for revenue accounting work, and for checking invoices and computing payrolls, has been developed by the Burroughs Adding Machine Company. This is a small and compact machine

New Calculating Machine that Weighs Under Seven Pounds

and a practical calculator. It is equipped with full-size keys, a standard keyboard, and visible adding dials.

The new machine, which is only 6½ in. by 11¼ in., has a crystal-finish case. It has an accumulating capacity of 9,999.99 for addition and multiplication. Subtraction and division are facilitated by the proper complementary figures on all keytops.

The mechanism of the new calculator is adjusted to high speed operation. It has been subjected to numerous tests as a means of proving its efficiency in the hands of experienced operators. The new machine weighs under seven pounds and is reported to be sold at a price less than half that of larger machines.

* See the *Railway Age* for December 11, 1926, page 1153.

Great Northern Pacific Merger Hearings

WASHINGTON, D. C.

FINAL testimony in support of the application of the Great Northern Pacific for authority to take over and unify the operation of the Great Northern, Northern Pacific and Spokane, Portland & Seattle was presented before Commissioner Brainerd of the Interstate Commerce Commission and Director C. D. Mahaffie of its Bureau of Finance at Washington on March 19, 20 and 21, following extensive earlier hearings at Washington and in the West. The final witnesses were Charles Donnelly, president of the Northern Pacific, and Ralph Budd, president of the Great Northern, while additional statistical testimony was given by V. P. Turnburke, general auditor, and H. K. Dougan, assistant general auditor, of the Great Northern, largely in rebuttal of earlier testimony on behalf of the Chicago, Milwaukee, St. Paul & Pacific, which is opposing the plan.

Mr. Budd's Statement

In his concluding statement Mr. Budd outlined a proposal for the purchase of the Minneapolis & St. Louis, now in receivership, by the Great Northern Pacific, if the unification plan is approved, and also for the disposition of six short line railways connecting with the lines of the proposed system, aggregating 161 miles. For the Minneapolis & St. Louis, 1,627 miles, he said, the new company would offer securities bearing an annual interest return of $600,000. The company has paid no dividends since 1910 and its net railway operating income was $222,173 in 1926 and approximately $184,000 in 1927. In the case of the Minneapolis & Rainy River, the Minneapolis, Red Lake & Manitoba, the Montana Western, the Waterville, and the Nez Perce & Idaho, the Great Northern Pacific would agree to direct their operation and to pay to the owners any net operating income that might accrue. The Minneapolis, Anoka, & Cuyuna Range, having 16 miles of track between Minneapolis and Anoka, Minn., is not regarded by the Northern lines as necessary and the new company would be willing to compensate the owners on the basis of the reproduction cost of any industry tracks and the salvage value of the property.

As to the other lines Mr. Budd expressed the belief that unless some disposition of these lines is provided the roads would be unable to serve their territories adequately and, in some instances, might be forced to suspend operation. As to the Minneapolis & St. Louis he said there does not seem to be anything in its history to indicate that its net operating income, operated as a separate company, will improve much in the future over what it has been for the past few years.

"While I do not think its fortunes would be adversely affected by the proposed unification," he said, "it is conceivable that unless it is taken over by some large system it eventually would have to cease operating as a separate railway and parts of it would be removed, to the serious inconvenience of shippers who depend upon those parts of the road for their railway transportation. The line could just as logically become a part of some other systems as of that of the Great Northern Pacific, but it cannot be said that its inclusion with the Great Northern Pacific is impracticable as an operating matter or that certain economies and advantages would not result from such inclusion."

Mr. Donnelly outlined the joint development of the Great Northern, Northern Pacific and Burlington since 1901, when the two Northern companies purchased 98 per cent of the stock of the Burlington, saying that it would be "almost impossible" to divorce either line from its Burlington ownership and that it is "almost unthinkable" that the commission would allow either line to be consolidated with the Milwaukee and to continue its ownership of 49 per cent of the Burlington.

Since 1901, he said, the relation created between the three lines has been regarded as permanent and their development has been carried on more or less in consciousness of that fact. Expansion and development with a view to the integration of the facilities of the three companies has gone on consistently and although competition has persisted between the two Northern lines the partnership relation originated in 1901 has been deepened because of what they have done together. Mr. Donnelly then mentioned the numerous lines built by the three companies to connect with each other and the joint construction of the Spokane, Portland & Seattle. He then pointed out that the 49 per cent of Burlington stock owned by each of the two companies is pledged as security for an issue of $115,000,000 of bonds of each company, with a provision that the collateral shall not be sold in less than its full amount or for less than its fair value.

He said the Burlington now interchanges more freight with each of the two Northern lines than with any other system and that routes and channels of trade would be interfered with if either of the lines were to be consolidated with the Milwaukee. On cross-examination, F. H. Wood, representing the Milwaukee, asked if the merger should be authorized on the ground of the practical difficulty of separating either company from the Burlington. Mr. Donnelly said that that is one good reason, to be considered along with the other advantages and the economies that can be realized from consolidation. He admitted that there might be some practical advantages from consolidation of the Northern Pacific with the Milwaukee.

Further Testimony From Mr. Budd

Mr. Budd testified that the Spokane, Portland & Seattle had made a definite offer to the Milwaukee, after H. E. Byram, then receiver, had stated that the proposed unification would keep it from entering Portland, Ore., to allow it trackage rights over the Spokane, Portland & Seattle from Spokane to Portland, at a rental of 5 per cent on half its cost plus a user proportion of operating expenses.

Mr. Budd also said that the Great Northern and Northern Pacific lend themselves especially well to operation by a single management and that a most effective operating situation could be obtained by changing the operation so that, instead of two long lines from headquarters at St. Paul there would be two grand divisions, separated approximately by the Montana-North Dakota line of 8,000 miles each. "While general policies would continue to be handled from Twin City headquarters," he said, "the operating management would be decentralized and there would be one headquarters at the western end.

"I do not contend that every consolidation of railways could be operated more efficiently and economically," said Mr. Budd, "but our geographical situation in the Northwest lends itself peculiarly to the more efficient administration of our two railways as a unified system.

"Under the present two-company arrangement, the operating and traffic executives of both companies must travel long distances to keep in contact with their organizations, and they must then double back over the same route to return to their St. Paul headquarters. With the two systems unified and divided into eastern and

western administrative units, the officials of each unit can make a loop trip over their territory and be back at their headquarters at the end of the trip instead of having to double back from half way across the continent, as they are obliged to do at present. Under the administrative plan we propose, these officials can reach the remotest portion of their territory in virtually half the time that is now required to reach the most distant cities.

"From the standpoint of contact with their field organizations, unification will, I believe, virtually double the effectiveness of these officials.

"Some consolidations operate to increase the geographical spread of the managing officials," said Mr. Budd, "while our plan will enable us to have two compact geographical units which lend themselves to efficient administration."

Mr. Budd said that the geographical extent of the system would be less than that of the Milwaukee, because it reaches Chicago, while the Burlington would continue to be operated from Chicago, as it has been for 27 years. Also, he said, in all practical aspects which have a controlling effect on the efficiency of management, the Great Northern Pacific plus the Burlington would not be so great as the New York Central or Pennsylvania systems.

Other Witnesses

W. P. Kenney, vice-president in charge of traffic of the Great Northern, discussed exhibits showing the number of industries exclusively located on each of the three lines. He said the Milwaukee has a considerable advantage over the Northern companies as to the number of exclusive industries on the east end of its line, offsetting any advantage which they may have as to the west end. However, he said the number of exclusive industries is not the best measure of the comparative command of traffic and that in the Northwest only about 25 per cent of the traffic is competitive.

The witnesses for the Northern lines were cross-examined by Mr. Wood, particularly as to the various estimates of possible economies and operating advantages.

H. E. Pence, president of the Minneapolis, Northfield & Southern, which had indicated at a previous hearing that it was not opposed to the application, testified that conditions had now changed because the interests controlling it had acquired the Electric Short Line Terminal Company and the Minnesota Western, which had asked to be included in the merger plan, and he therefore asked that all three short lines be included.

Cross Examination

Mr. Budd was cross-examined by Clarence A. Miller, counsel for intervening short lines, as to further details regarding the proposal for dealing with the lines mentioned and also as to why he had omitted certain other lines, including Minneapolis, Northfield & Southern, the Minnesota Western, the Electric Short Line Terminal, the Leavenworth & Topeka, and the Wyoming. He also asked whether single-line rates would be applied over short lines. Mr. Budd said that the purpose had been to consider lines that were in some danger of being abandoned, such as roads built as logging roads on which communities had been built up, in order to give shippers a guaranty of continued service. He said the Pence lines did not seem to be in danger of abandonment and that, forming part of a route to Chicago via the Chicago Great Western, their interchange might be considerably affected if transferred to another company having a route to Chicago. Also he had not thought of the short lines connecting with the Burlington as being affected by the application. Mr. Miller asked if the Great Northern Pacific would be willing to take in all the connecting short lines the commission might find ought to be preserved, in the public interest, and might allocate to the system. Mr. Budd said that it would give careful consideration to any terms the commission might prescribe but that he could not say definitely what would be done without knowing them.

After some discussion it was decided that the applicants should file their brief by June 5, that the opposing interveners should have 30 days additional in which to file their briefs, and that the applicants should then have 30 days in which to reply, with a view to having the oral argument before the commission perhaps late in September.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended March 10 amounted ot 951,553 cars, a decrease of 49,201 cars as compared with the loading in the corresponding week of 1927 and of 15,872 cars as compared with 1926. Loading of grain and grain products and livestock was larger than a year ago but decreases were reported in other commodity classification totals. Coal loading amounted to 174,750 cars, as compared with 220,241 cars in the corresponding week of last year. Loading was heavier than a year ago in the Southern and Northwestern districts but the totals for other districts show a decline. The summary, as compiled by the Car Service Division of the American Railway Associations, follows:

Revenue Freight Car Loading

Districts	Week Ended Saturday, March 10, 1928	1927	1926
Eastern	218,680	234,909	236,440
Allegheny	187,128	210,821	198,556
Pocahontas	53,649	60,915	51,597
Southern	161,614	161,357	161,692
Northwestern	119,020	116,850	114,799
Central Western	136,480	138,933	132,183
Southwestern	74,982	76,969	72,158
Total Western Districts	330,482	332,752	319,140
Total All Roads	951,553	1,000,754	967,425
Commodities			
Grain and Grain Products	49,533	39,518	40,245
Live Stock	28,064	27,251	27,302
Coal	174,740	220,241	188,834
Coke	11,355	12,648	14,929
Forest Products	67,512	69,915	74,560
Ore	8,936	10,850	10,428
Merchandise L. C. L.	257,966	263,522	264,331
Miscellaneous	353,437	356,809	346,796
March 10	951,553	1,000,754	967,425
March 3	959,537	989,863	965,009
February 25	869,590	918,858	912,935
February 18	887,891	954,794	932,281
February 11	906,009	962,602	917,625
Cumulative total, 10 weeks	8,948,507	9,549,195	9,296,462

The freight car surplus during the period ended March 8 averaged 352,854 cars, as compared with 372,916 cars on February 29. The total included 165,275 coal cars, 139,377 box cars, 24,452 stock cars and 12,710 refrigerator cars.

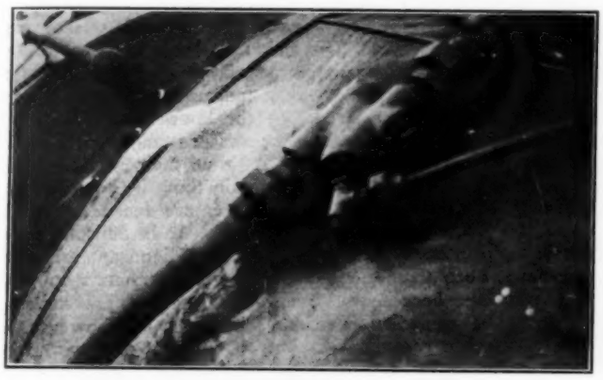
Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended March 10 totalled 62,497 cars, a decrease from the previous week of 1,885 cars, and a decrease from the same week last year of 2,531 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
March 10, 1928	62,497	43,370
March 3, 1928	64,382	43,533
February 25, 1928	61,087	39,266
March 12, 1927	65,028	44,304
Cumulative Totals for Canada		
March 10, 1928	627,306	386,600
March 12, 1927	603,596	381,853
March 13, 1926	548,885	360,690

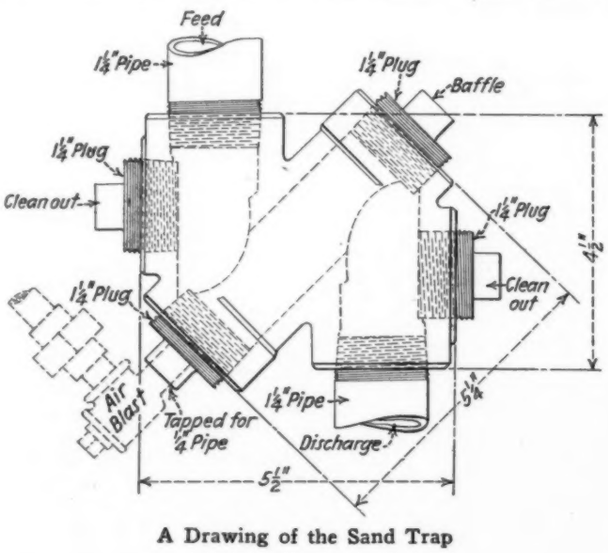
An Interchangeable Locomotive Sand Trap

OWING to the cutting quality of sand under pressure, the walls of a sand trap quickly wear out. W. H. Buckingham, Lock Box 632, Mayfield, Pa., has patented and has had in service for a period of three years an interchangeable reversible sand



The Sand Trap Is Reversible and Can Be Used on Either Side of the Locomotive

trap for which it is claimed that the life is twice as long as others now in use. At each end of the diagonal passage through the sand trap is a 1¼-in. plug. When the sander is applied to the locomotive, the jet nozzle enters the trap through the lower plug. In time, the walls in the upper end of the diagonal passage are worn thin by the action of the sand. When this oc-



A Drawing of the Sand Trap

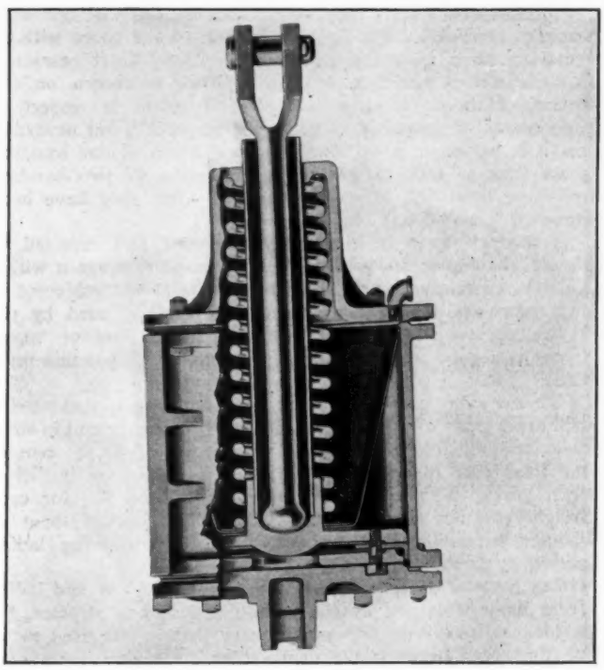
curs the sand trap is turned end for end, thus causing the thick walls to receive the abrasive action of the sand. The sanders are also interchangeable in that they can be used in any position on either side of the locomotive.

Bolts, gaskets, nuts, adjustable parts, etc., have been eliminated, thus leaving no complicated parts to get out of order. The removable plug at the bottom contains the air jet which makes it convenient when nozzle repairs are required. Two ¾-in. plugs, one on each side of the sand trap, are used when it is necessary to clean out the trap.

Brake Cylinder Protector

THE Westinghouse Air Brake Company, Wilmerding, Pa., has recently placed on the market a brake cylinder protector which, as its name indicates, is designed to prevent dirt and water, which may enter at the non-pressure side of the piston, from reaching the cylinder walls and packing, thus increasing the life of packing cups and reducing leakage.

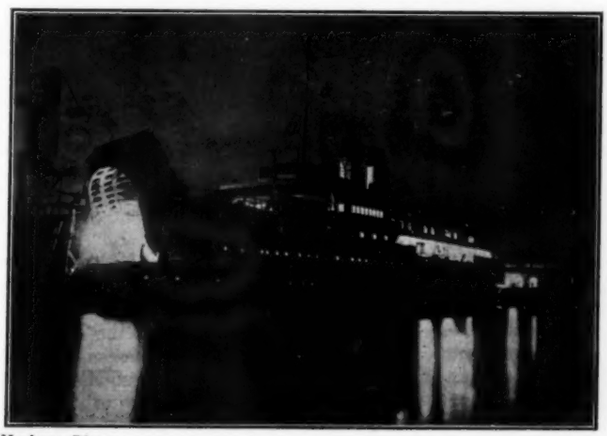
The protector consists of a conical-shaped impregnated canvas structure, so devised that at one end it is



The Brake Cylinder Protector Prevents Dirt and Water from Reaching the Cylinder Walls and Packing

clamped between the cylinder body and the non-pressure head where it functions as a gasket, while at the other end it is held in position against the piston by the release spring. Any dirt or water entering the cylinder is trapped by the protector. The water is discharged through a drain opening provided in the non-pressure head. The protector is flexible and collapses as the brake is applied.

* * *



Herbert Photos

Bow of German Baltic Train Ferry "Schwerin" Raised to Admit a Train

Communications and Books

Maintaining Draft Gears

New Haven, Conn.

To the Editor:

I have read with great interest Mr. Nystrom's letter on draft gears published in the *Railway Age* of March 3. This is the first article of this kind that I have read which gives practical information on this much discussed subject.

I do not approve of the method used by the Chicago, Milwaukee, St. Paul & Pacific in inspecting of the gears without removing them from the attachments. Many draft gears are in a defective condition, but no evidence is shown on the striking casting. I agree with Mr. Nystrom in respect to the expense of dropping all gears for inspection, but nevertheless it is better to make a practical inspection of one hundred gears than to make a guesswork inspection of two hundred and have them fail in service a month after they have been stenciled "Graft Gears Inspected."

If a draft gear is thoroughly inspected and repaired, it should not be necessary to drop it for inspection again within a period of two years, provided the gear was not subjected to any more use than the average. The method used by the Milwaukee to inspect draft gears when cars are on repair tracks is a good idea and other roads should follow this practice.

A great many cars are leaving shops and repair tracks today with draft gears of an uncertain degree of efficiency and in some cases without any. A conservative estimate of 40 per cent of the total cost to repair freight cars is caused by inefficient draft gears. The sum would represent at least $60 for each freight car, not to mention the millions of dollars spent on damage to lading and the necessity of transferring lading caused by damage to cars.

The purpose of draft gears is to protect the car and lading from damage caused by the pulling and buffing stresses, but to look at some cars one would think that it was used to fill up the space between the draft stops. All vital parts of a car are expected to be removed within a certain period of time, but to look at the average draft gear it would appear to me that most railroads expect the draft gears to last indefinitely without repairs. If the truth were known, many a car rider is severely reprimanded for damaging a car when the damage was caused by a defective draft gear.—James McDonnell.

Are Union Stations Justified?

Newton Center, Mass.

To the Editor:

From time to time after-dinner speakers expound the virtues of union stations and indulge in oratorical flights which leave their hearers in a dazed and almost flabbergasted condition. Of course, the success of some terminal projects has a great deal to do with all this eloquence; and may, in a measure at least, justify it. On the other hand, there are a number of points which will bear examination.

First of all, many of the orators advocate locations which are exceedingly expensive. To the cost of the necessary real estate it would be necessary to add the outlay for the inevitable electrification which would be demanded as the price of allowing the railroads to occupy the new location.

It is conceivable that such a price would not be too great under certain circumstances; but it is absolutely certain that it would be out of the question in others.

Secondly, there are conditions under which the union station would not materially facilitate the movement of passenger traffic, but would merely cause congestion and confusion. To set up a focal point for crowds is not necessarily good business, from the railroad point of view. As a matter of fact, the segregation of passengers may be advisable in cases where there is little interchange or interline business, or where such business is merely seasonal or periodic. It may, therefore be wise to continue operation of existing stations until conclusive evidence of the need of a union terminal is forthcoming. That is simply good business and sound sense.

At various times, most of us have had the unpleasant experience of meeting or having as neighbors people who wanted to "run" us and who felt that their mission in life was to boss us. The railroads know something of these pests, also. Matters which require careful thought and mature deliberation are disposed of "before breakfast" by the know-it-all element.

An experience of more than 20 years has taught me that the railroads are just as anxious to improve their service as the public is to get good service. The main thing is, however, that the railroads know what improvements are feasible, and the public is not always so well informed. It is difficult, sometimes, to keep one's temper in the face of ignorant criticism; especially when that criticism comes from persons who wield unearned—and hence, undeserved—authority and influence.

Time, the comedian, has an uncanny habit, however, of administering a resounding wallop to all who play with facts and ignore the truth.

Let us have union stations, by all means; but where they are needed, and after proper and due consideration! So far, a large amount of talk might be classed as old wives' tales and card party gossip. Certainly, it is not supported by the practical reasoning which one has a right to expect from men of experience and unquestioned ability.—Arthur Curran.

Do Roll Straighteners Hurt Rails Less than the Gag?

Washington, D. C.

To the Editor:

An earlier issue of the *Railway Age* (February 11, 1928) described a method of straightening steel rails as practised abroad. In lieu of the use of a gagging press the rails are roller straightened. This device is in use at the Krupp Works and consists of a series of rolls, three upper rolls and two lower ones. The rolls are so spaced, horizontally and vertically, that rails passed between them are alternately strained in opposite directions.

The rails, in progression, are subjected to strains of tension and compression over their entire lengths, excepting short sections at each end where the rolls cannot function. Virtually all parts of their lengths are overstrained. The dislodging of mill scale, magnetic oxide, from both the heads and bases testify to this effect.

This five-roll straightening device strains the rails by means of wheel pressures and far beyond the ordinary wheel loads of service. The operation of gagging does the same, but gagging is a local effect, whereas roller straightening is a general one. This method of straightening is not new, although its application to steel rails appears to be. It would seem that engineers who cling to the opinion that gagging is a serious operation, injurious to the rails, would find difficulty in approving a method of straightening which affects the entire length of the rail while objecting to a method which disturbs only a part of it.

It is desirable, however, to look into this matter and see what gagging and roller straightening consists of. Everybody knows, or should know, that a steel rail cannot be straightened at any temperature, hot or cold, without exceeding the elastic limit of the metal. Furthermore that such straightening will certainly be attended with the introduction of internal strains.

If the straightening is done cold, all parts of the rail having attained a uniform temperature, certain results will be reached, modified by the pre-existing cooling strains. It is easy to predict what the state of internal strains will be when a steel bar of simple shape is gagged. Complex conditions are presented in a steel rail.

Take the case of a plain rectangular bar. Such a bar when

permanently bent, the bending load having been removed, will have internal strains as follows: strains of compression on the convex side of the bend; strains of tension next beyond; then the neutral axis of the bar; next beyond internal strains of compression; and finally internal strains of tension at the concave side of the bar, that is on the inside of the bend.

The disposition of these internal strains and their changes from plus to minus directions are conveniently illustrated by planing away progressively some of the metal of the cross section of the bar, and noting the changes in shape which follow. If the steel bar is bent into the shape of a horseshoe, magnified indications will be presented. The legs of the bar will separate for a time when the metal is planed off, irrespective of whether it is taken from the convex or the concave side of the bend. Continue the planing and the legs after a time will reverse the direction of their movement and approach each other. Still continue the planing and the legs will eventually again reverse their movement and separate as in the first instance.

Another method of examination will be adopted in the case of steel rails. Since the rails are substantially straight at the time it is desired to ascertain the values of the internal strains, narrow strips are detached from different parts of their cross section. The expansion or contraction in length of these strips indicate the strains to which they were exposed in the intact rail. The measured strains are converted into corresponding stresses by reference to the modulus of elasticity of the metal.

A rail straightened by bending, no matter what means are employed for the purpose, springs back when the straightening force is removed, the resilience continuing until the internal strains reach a state of equilibrium. The internal strains then just balance each other, those of tension having the same aggregate value as those of compression. It takes very little to disturb this state of equilibrium, hence it is easy to impart to the rail an additional permanent set by the application of an external load.

Cooling strains and gagging strains acquire maximum values depending upon the temperature of the steel. The elastic limit of the metal, at any temperature, fixes the maximum attainable strain. Since the elastic limits of steels drop in values as the temperature rises internal strains will also drop until zero value is reached at plastic temperatures. This apothegm carries with it the deduction that steels at high temperatures may be forged or rolled at will into different shapes without attention being given the matter of internal strains.

Microscopically, the effects of gagging are not witnessed at any considerable depth below the gagged surface. A slight indentation takes place at the surface. So far as penetrating to the zones in which common types of fracture originate no evidence of gagging has been found. The effects of cold rolling on the other hand are visible in the flattening of the grains of the steel, and in the brittleness of the surface metal. Roller straightening and the wheel loads of service obviously affect the surface metal in the same manner.

It would be a matter of interest to ascertain the values of the internal strains set up by roller straightening. Also to determine the values of the residual elastic limits which remain in the rails after such straightening. The latter information has a bearing upon the ability of the rails to endure track stresses in the strict maintenance of surfacing.

There is considerable going on in the interior of a rail. It does not follow that all of it is of vital consequence to its state of integrity. Internal strains acquired under normal conditions of cooling or from gagging appear as negligible quantities in comparison to the strains set up by the wheel pressures when the rails are put into service. It is not to be supposed that a few passes of the rail through the Krupp roll-straightening device would go far toward effecting their rupture. The action of the device is however the same as the action of wheel loads in service, differing in degree in which the Krupp device outdoes the regular wheel loads.

Opportunity will be taken to refer to some testimony from abroad concerning the behavior of steel rails exposed to track conditions. A translation in the June, 1927, Bulletin of the International Railway Congress Association, from the Revue Generale Des Chemins de Fer, quotes a statement of the Chief Engineer of the Technical Service of the Orleans Company as follows: "There is no record of a single accident which could be ascribed to cold work hardening of the rail alone."

If this statement is understood there is a basal difference in railway experience in France over that of the United States. Cold work hardening in this connection is taken to mean the usual effect of cold rolling of the wheels on the metal at the top of the head of the rail.

Cold rolling of the running surface of the head of the rail sets up internal strains of compression, both temporary and permanent, in both longitudinal and crosswise directions. The longitudinal component tends to cause the formation of transverse fissures. The crosswise strains tend to cause split heads, vertical and horizontal. The strains set up not only tend to cause broken rails but they do cause broken rails, and broken rails cause accidents.

An influence which leads to rupture need not attach immediately to the locus where rupture originates. Fractures caused by internal strains do not originate in the metal which is in a state of compression. Fractures are displayed in that part of the rail in which the reaction was of tension. Internal strains in the cold rolled or cold worked metal are regarded as the proximate causes of many rail fractures.

James E. Howard,
Engineer-Physicist,
Bureau of Safety, Interstate Commerce Commission.

New Books

Railway Signaling, by S. T. Dutton, M. Inst. C. E., Late Deputy Chief Engineer, East Indian Railway, 148 pages. 5 in. x 7½ in., illustrated, bound in cloth. Published by Crosby Lockwood & Son, Stationers' Hall Court, Ludgate Hill, London, England. Price seven shillings, six pence.

This book is described in the title page as a practical manual for engineers, transportation officers and students, and the preface assures us that the text is clear and concise and that the subject has been treated throughout in a practical manner. The four most prominent chapters describe manual block signal working, as practiced in England and in India; and six other chapters deal with the details of manufacture and installation of apparatus for manual block signaling and for mechanical interlocking. Automatic block signals, as well as electrical matters generally, are conspicuous by their absence.

Farm Relief—A Brief on the McNary-Haugen Plan. By James E. Boyle, Ph. D., professor of rural economy, New York State College of Agriculture, Cornell University, New York City. 281 pages. 7-¾ by 5-¼ in. Published by Doubleday Doran & Co., Inc., Garden City, N. Y. Price $1.00.

The question of farm relief is, or should be, of interest to railway officers. First, prosperity on the farms largely determines the traffic and earnings of many roads. Secondly, for many years when the farmers have suffered from adversity it has been the practice of politicians to seek reductions of freight rates on farm products, almost regardless of the effects on railway earnings and service.

Professor Boyle is opposed to the McNary-Haugen bill. This book, however, is much more than a discussion of that bill. The author presents a remarkable array of facts to show what has been and is the condition of agriculture and the reasons for it. Among the arguments advanced for the McNary-Haugen bill has been that the government ought to help the farmers because it has helped the railways and other industries. Professor Boyle, in one chapter, accurately but briefly summarizes the history of railway regulation, and the laws under which it is now administered. He shows that the government has not "helped" the railways, that its regulation has limited rather than increased their rates and earnings, and concludes, "Do farmers want their private business to have the same treatment. Government aid and government control go hand in hand."

The book contains a large amount of valuable information, it is logically, clearly and interestingly written and it will repay reading by those who want to know why the present farm problem exists and the ways in which it should and should not be dealt with.

The Catalogue of the Centenary Exhibition of the Baltimore & Ohio Railroad, 1927 (Final Edition). 210 Pages. 6 in. by 10 in. Illustrated. Published by the Baltimore & Ohio, Baltimore, Md.

This is the revised edition of the catalog of the Baltimore & Ohio's "Fair of the Iron Horse" which was held for 23 days beginning on September 24, 1927, at Halethorpe, Md. The first edition of the catalog was prepared in advance of the opening of the fair and was sold in great quantity on the fair grounds. Naturally the first edition could not contain a description of the great pageant which was non-existent at the time it was prepared. To include a catalog of the pageant and last-minute additions and changes to the exhibit, this complete edition has been prepared. The first edition is so well known that perhaps the most effective way to describe the final edition is to say that it follows closely the original in form and appearance. Beginning with a foreword telling of the fair and its great popular success—an attendance of 1,225,000—it then gives a brief historical sketch of the railroad, describes the development of the pageant and launches into the catalog, describing each exhibit item by item historically and physically. The descriptions are concise, but cover all the essentials. Like the first edition, this one is richly illustrated and well printed. It is a book which, interesting now, will in years to come prove a valuable historical record. Railroad men who like to own books of enduring merit will, in our opinion, do well to secure a copy of this and put it in their bookcases, to interest them and their posterity in the years that lie ahead. Incidentally the catalog probably holds a record as a railroad best seller—60,000 copies sold, and still active.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Preparation of Rate Cases—Procedure in Rate Making, prepared by Traffic Research Staff, La Salle Extension University. Traffic Management Manual No. 61. Concise description of functions of freight associations, classification committees, traffic associations, procedure of shippers in securing rate adjustments and of important factors in rate case procedure. 69 p. Pub. by LaSalle Extension University, Chicago, Ill. $1.

Text of the Fortieth Annual Report on the Statistics of Railways in the United States for the Year Ending December 31, 1926, prepared by Bureau of Statistics, Interstate Commerce Commission. Includes also selected data on carriers by water, the Pullman Company, Electric railways, Telegraph and cable companies, Carriers by pipe line and Telephone Companies. 138 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. 25 cents.

Periodical Articles

Democracy's Dilemma—Is the Nation Encroaching on Our Rights? by Oscar W. Underwood. Power and influence of the Interstate Commerce Commission discussed on pp. 566-568. Forum, April 1928, p. 562-573.

Hill Country, II, by Ramsay Benson. Further installment of prize novel based on life of J. J. Hill. Forum, April 1928, p. 618-631.

Social and Economic Problems of the Law, by Roscoe Pound. "Our legal institutions belong to an era when General Grant took nine days to travel by river boat, canal and rail from Ohio to West Point. Today he could travel by rail from Los Angeles to West Point in half that time." p. 4. Contained in a section discussing political and economic changes wrought by improved transportation contrasted with the legal standstill. p. 3-5 Annals of the American Academy of Political and Social Science, March 1928, p. 1-9.

Looking Backward

Fifty Years Ago

Thinly peopled as is the country on the line of the Union Pacific the annual report for 1877 shows that 23 per cent of its freight business and 54 per cent of its passenger business was local traffic. With the exception of the Pennsylvania the Union Pacific had greater net earnings per mile in 1877 than any other railroad in the United States, amounting to $6,927, and at the same time carried only one-fifth as many ton-miles as the Pennsylvania. The Union Pacific has the advantage that it is all main line.—*Railroad Gazette,* March 22, 1878.

A substitute for the Iowa railroad law has been adopted which renounces the principle of establishing by law the exact rates to be charged for carrying freight by each line. The new law provides for a board of commissioners who are to collect statistics, hear and investigate complaints and make reports and recommendations.—*Railroad Gazette,* March 22, 1878.

The contract for the longest single mail route in the United States was recently awarded to a resident of Arkansas. The route is from Fort Worth, Tex., by way of El Paso to Fort Yuma in Arizona, 1,300 miles. The service is to be performed daily in coaches and the contract price is $137,000 per year, about 14 cents per mile.—*Railroad Gazette,* March 22, 1878.

Following a violation by the Wabash of the established tariffs the eastern trunk line commissioner on March 18 ordered that all westward freight marked by way of that road and destined to Missouri river points and further west, be diverted from that line and divided between the Chicago and St. Louis roads.—*Chicago Railway Review,* March 23, 1878.

Twenty-Five Years Ago

On May 1 a thirty-dollar 1,000-mile rebate interchangeable mileage book will be put into effect on the lines of the Baltimore & Ohio, the Chesapeake & Ohio, the Delaware, Lackawanna & Western, the Erie, the Lehigh Valley and the Pennsylvania.—*Railway Age,* March 27, 1903.

J. E. Hutchison, heretofore trainmaster on the Chicago & Alton, has been appointed division superintendent of the St. Louis & San Francisco, with headquarters at Sherman, Tex.—*Railroad Gazette,* March 27, 1903.

C. A. Morse, principal assistant engineer of the Atchison, Topeka & Santa Fe at La Junta, Colo., has been appointed engineer of the Eastern Grand division, with headquarters at Topeka, Kan.—*Railway and Engineering Review,* March 21, 1903.

Ten Years Ago

The Minneapolis, St. Paul & Sault Ste. Marie has undertaken an active program of tree planting as a means of protecting its tracks from drifting snow. Trees have been planted along 250 miles of right-of-way each year. Eight rows of trees are used with laurel-leaved willow in the front row.—*Railway Age,* March 22, 1918.

The Interstate Commerce Commission, in a series of orders handed down on March 15, allowed most of the increases in rates asked by the railroads in official classification territory at the hearing in November, 1917. The decision allowed increases in class rates, generally on a 15 per cent basis, which will result in increased revenues of about $97,000,000 per year.—*Railway Age,* March 22, 1918.

Director General McAdoo has decided that in reducing the passenger service between New York and Washington shortly after the first of the year he cut too deep. After an investigation of the increasing travel he has ordered the restoration of the Pennsylvania's Congressional Limited as a train of 10 parlor cars.—*Railway Age,* March 22, 1918.

Odds and Ends of Railroading

They Can Take It All Over, If They Like

T. H. Schwett, a dining car steward on the New York Central Lines, claims that in addition to exercising the other masculine prerogatives, women now tip as freely in dining cars as men do, the variation in tips being entirely due to individual peculiarities and not to sex. There goes another one of the few remaining male rights.

Another Advantage of Rail Travel

"That the train is a good place in which to work is the conviction of many prominent literary men," says the New Zealand Railways Magazine. "The peculiar pleasure and excitement of train travel gives wings to the imagination and the mind goes soaring into every corner of the realm of fancy.

"Of the great literary men of our day who work in the train, George Bernard Shaw is perhaps the most famous. It is said that this distinguished dramatist writes nearly the whole of his plays whilst traveling in the train between London and his country house at Agot St. Lawrence, Herts."

If all writers had the income of a G. B. S., Greenwich Village might be an excellent place for an extensive passenger traffic campaign.

How to Beautify Ugly Stations

J. Blumeneld Elliott, assistant to general manager (public relations and advertising) of the Southern Railway (England), has written to the editor of *Modern Transport,* (London), in answer to an article in that publication comparing British and foreign railway advertising policies. The writer had spoken of the freedom of large American and German stations from advertising signs.

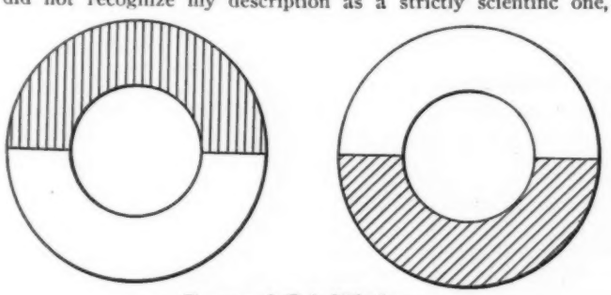
But, Mr. Elliot, says the writer, "is not comparing like with like when he talks of the Grand Central (New York) or the Leipzig Station, and British stations. The former are architectural masterpieces—ours are mostly ugly, utilitarian buildings. Strip the average British station of its advertisements—and see how drab and dreary it looks! Rearrange, select, and panel out the advertisements by all means; floodlight them where you can; but don't throw away thousands of pounds' worth of revenue to allow the public to gaze in awe and wonder at the grimy bricks of the Victorian era!"

Well, We Hope This Settles It!

KAIGHNS POINT, N. J.

TO THE EDITOR OF ODDS AND ENDS:

I thank you for printing my letter telling your readers about my colored cab window. I should have told you that the invention is not patented. For the benefit of those readers who did not recognize my description as a strictly scientific one,



Proposed Cab Window

I send you herewith a sketch, which you may like to use. The left-hand figure shows the upper half of the window with a green half circle, and the right-hand shows the lower half with a yellow half circle.

Signal engineers will call this a crude invention. But they will recognize how easily it can be perfected. The first objection will be to the movable colored glasses; but any one familiar with electric advertisements, in the great variety in which they are to be seen today, will understand that the coloring of this window can be done without the use of any moving part. For the engineman who, in warm weather must have the front window open, it also will be easy to provide. In short, as I said, the cab signal specialist can give the reasonable engineman anything that he wants.

ALEX. DUR

Some of Our Distances

An American in England was endeavoring to impress on his English host an idea of the immense size of the United States. "Why," he exclaimed, "I can get on a train in the State of Pennsylvania at seven o'clock at night and I shall still be in Pennsylvania at seven o'clock the next morning."

"We have trains like that on our railways, too," replied his host, "but we don't boast about them."

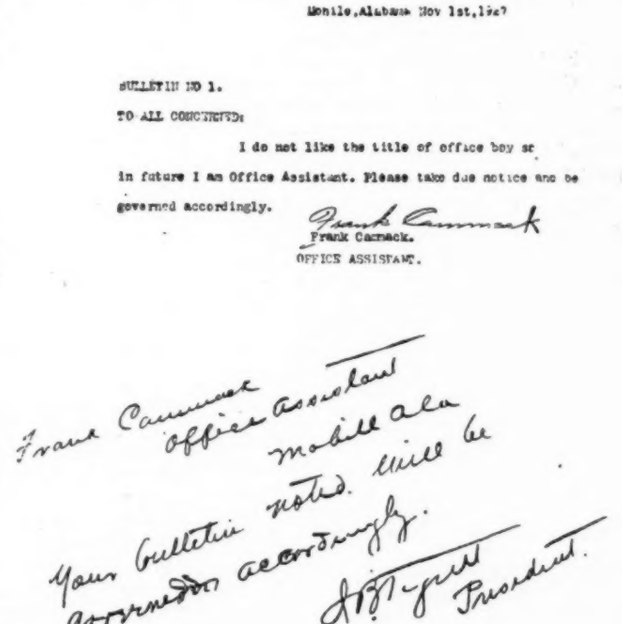
This calls to mind the case of the man from Indiana on his way to Arizona and who was of an inquisitive turn of mind, desiring to see and appreciate all sights worth seeing along the road. Arriving at Texarkana, Texas, early in the morning and having gone out on the platform for a little walk, observed, "Well, this is Texas;" and he endeavored to take in the wonders of that great state as well as the quality of his mind would admit. Desiring to enlarge his knowledge, he engaged in conversation with a fellow passenger and, among other things, asked "how long before we shall get to El Paso?"

"Oh! I guess in about 24 hours," said the Texan.

(Actually a 26-hour journey, all within one state.)

No Insubordination Here

The accompanying illustration depicts a bit of rather unusual official business which transpired on the Gulf, Mobile & Northern. Our correspondent does not report, however, the remarks



Mobile, Alabama Nov 1st, 19c?

BULLETIN NO 1.

TO ALL CONCERNED:

I do not like the title of office boy at
in future I am Office Assistant. Please take due notice and be
governed accordingly.

Frank Cammack.
OFFICE ASSISTANT.

Frank Cammack
office assistant
mobile ala
Your bulletin noted. will be
governed accordingly.
J T Gerard
President.

of the "office assistant" when he saw the president's endorsement on his circular.

NEWS of the WEEK

The Southern Pacific Gila River Bridge in Arizona

THE THREE receivers of the Chicago, Milwaukee & St. Paul, H. E. Byram, Edward J. Brundage and Mark W. Potter, were discharged by Federal Judge James H. Wilkerson, of Chicago, on March 21, formally ending the receivership. Judge Wilkerson ordered that all claims against the old corporation must be filed by June 30.

THE CANADIAN RAILWAY CLUB will hold its next meeting on April 10 at the Windsor Hotel, Montreal, when a paper will be read on "Television," by Dr. R. W. King, of the Bell Telephone Laboratories, New York. Dr. King will illustrate his subject with lantern slides.

THE CAR FOREMEN'S ASSOCIATION OF CHICAGO will hold its next meeting on April 9 at the Great Northern Hotel, Chicago, when a paper will be read on "Proper Loading of Cars," by M. E. Fitzgerald, general inspector of the Chicago & Eastern Illinois. Mr. Fitzgerald's talk will be illustrated.

THE NEW ENGLAND RAILROAD CLUB will hold its next meeting on April 10 at the Copley-Plaza Hotel, Boston, Mass., when a paper will be read on "The Railroad's Side of Grade Crossing Accidents," by A. H. Rudd, chief signal engineer, Pennsylvania.

DENIAL of the petition of the Atlanta Chamber of Commerce and other organizations of Atlanta, Ga., that the Interstate Commerce Commission modify its orders defining the limits of the standard Eastern and Central time zones so as to include that city in the Eastern zone was recommended to the commission in a proposed report by Attorney-Examiner John T. Money, made public March 16. The report said that the citizens and various interests of the city are unable to agree upon either standard of time and that many characters of commerce would be greatly inconvenienced by the proposed change.

THE ATCHISON, TOPEKA & SANTA FE held its thirtieth meeting of the System Loss and Damage Prevention Committee at Denver, Colo., on March 13 and 17. Among the 375 employees in attendance from all parts of the system were a large number of yardmen who were present to discuss rough handling. Due to a large number of claims on grain shipments carried over from 1926, when the Santa Fe handled an unusual amount of this lading and also due to other causes, the payments for 1927 totaled $1,356,540 compared with $1,231,418 in 1926. The ratio of claim payments to freight revenue amounted to 0.70 per cent in 1927 as compared with 0.62 per cent in 1926. The docket for the meeting included 35 subjects among which were: the percentage of loss and damage due to improper loading and bracing, the inspection of carload freight before receipt and delivery, fuel conservation, rough handling, the use of second hand containers and the desirability of permanent or detachable metal noseboards.

Central Railway Club Meeting

At the next regular meeting of the Central Railway Club on April 12 at the Hotel Statler, Buffalo, the speaker will be Paul Chipman, valuation engineer of the Pere Marquette. His subject will be "Construction and Possibilities of the Concrete Roadbed," which will be accompanied by illustrated pictures showing the various stages of construction of the experimental concrete roadbed on the Grand Rapids branch of the Pere Marquette.

Mr. Chipman acted as co-designer with Frank H. Alfred, president of the Pere Marquette, in laying out plans for this roadbed and had direct charge of the construction.

Bills in Canadian Parliament

A large number of private bills affecting Canadian railways are before the Canadian Parliament this session. Three recently introduced relate to a proposed new line in the Peace river country of northwestern Alberta, called the Peace River & Mackenzie District Railway; to an extension of time for completion of the Interprovincial & James Bay Railway in Quebec province, and to the granting of power to the Canadian Pacific to acquire the Lacombe & Northwestern in Alberta.

The capital stock of the proposed Peace River road is to be $5,000,000. The proposed road would run from Grimshaw, Alta., on the Edmonton, Dunvegan & British Columbia north to Fort Smith, Northern Territories (400 miles) with a 120-mile branch line.

When the bill, which was introduced in the House of Commons at Ottawa last week by Pierre F. Casgrain, (Chief Liberal Whip) and representing a Quebec constituency, R. B. Bennett, Conservative leader, pointed out that as the Edmonton Dunvegan & British Columbia already served this district and as it was not advisable to increase, in advance, the difficulties of the Canadian National which were expected to provide a link between the Peace River country and the Pacific coast, this bill ought to be carefully scrutinized before being allowed to pass. Charles A. Dunning, Minister of Railways and Canals, said there was no use debating the bill in the initial stage, but he reserved the right to express his views on it when it is referred to the Commission on Railways, Canals and Telegaph Lines.

American-Canadian Regulation Bill

A bill has been introduced in the House of Commons at Ottawa to enable the Dominion Railway Board to hold joint hearings with the Interstate Commerce Commission, either in the United States or in Canada, regarding matters pertaining to international rates and questions of a like character. A similar bill is now before the House of Representatives at Washington. The bill is likely to be referred to the standing Committee on Railways, Canals and Telegraph Lines, and is not likely to meet with any opposition.

Tie Producers Program

The National Association of Railroad Tie Producers will hold its annual convention at the Hotel Arlington, Hot Springs, Ark., on April 24-26. Among those who will appear on the program of this meeting are Earl Stimson, chief engineer of maintenance, Baltimore & Ohio, who will discuss "The Future of the Cross Tie Demand"; Nelson Courtland Brown, professor of Forest Utilization, New York State College of Forestry, Syracuse, N. Y., who will speak on "Failures of Substitute Cross Ties"; Evan W. Kelly, district forester, United States Department of Agriculture, who will speak on

"Forests and Floods"; W. J. Smith, tie and timber agent, Missouri, Kansas-Texas, who will discuss, "Gum Ties"', and Roscoe Hobbs, president of the Hobbs Tie & Timber Company, St. Louis, whose subject is "What the Tie Producer Expects of the Field Man." J. M. Kurn, president of the St. Louis-San Francisco will speak at the annual dinner on Wednesday evening, April 25.

K. C. M. & O. Investigation

A federal grand jury investigating the affairs of the Kansas City, Mexico & Orient returned a "no true bill" on March 7 at St. Joseph, Mo. The investigation, which was conducted by Roscoe Patterson, United States Attorney for the western district for Missouri and a representative of the Interstate Commerce Commission, followed charges made on March 11, 1925, by English noteholders of the original road, projected in 1902 to extend from Kansas City to Topolobampo on the Gulf of California. The investigation was to determine whether W. P. Kemper, president of the road, had made a false affidavit in connection with an extension of a two and a half million dollar loan made by the treasury department to the railroad. The interest was also due on March 11, 1925, and Mr. Kemper said the road had no money with which to pay either interest or principal. Since that time, however, Mr. Kemper secured approximately $500,000 through the settlement of claims, and turned this over to the road's treasury following the receivership.

Esch Confirmation Defeated in Senate

The President's nomination of John J. Esch for reappointment for another term as a member of the Interstate Commerce Commission was rejected by the Senate on March 16, as had been generally expected after the committee on interstate commerce had voted 10 to 7 against confirmation on March 6. The vote to reject the nomination was 39 to 29, the roll call not being made public because the action was taken by the Senate in executive session. The vote was reached after about four hours of debate behind closed doors, the fight against Mr. Esch being led by Senator Neely, of West Virginia, because of his vote in the lake cargo coal rate case, while Senator Watson, chairman of the committee on interstate commerce, and Senator Fess, of Ohio, who had presented a minority report from the committee in favor of confirmation, defended Mr. Esch.

It is reported also that Senators Howell, La Follette, and Norris voted in favor of confirmation of Mr. Esch because he had voted with the majority of the commission in the O'Fallon valuation case.

President Coolidge has requested Mr. Esch to continue as a member of the commission under his recess appointment until he completes certain work on which he has been engaged and to give the President time to consider the appointment of his successor. When the Senate had failed to act during the holiday recess on the President's reappointment of Mr. Esch he gave him a recess appointment and the President construes this as holding good until the end of the present session of Congress.

The President regrets the action of the Senate in rejecting Mr. Esch, which he understands turned on the decision of the commission in a particular case. He fears that if the decisions of the commission are to be reviewed in that manner by the Senate it will be difficult to get men of the proper caliber to serve on the commission, a body which he has been told is second only in importance to the Supreme Court of the United States.

Brotherhoods Want Mechanical Firebox Doors

The Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, in a complaint filed with the Interstate Commerce Commission, ask that the commission adopt a rule requiring that all locomotives be equipped with mechanically operated firebox doors. The complaint says that the chief inspector of locomotives has recommended the adoption of such a rule, that the legislatures of several states including Georgia, Indiana, Iowa, Michigan, New York, Ohio, and Wisconsin have passed laws requiring them, and that some railroads have equipped a large number of their locomotives with them.

National of Mexico Freight Service Improved

Marked improvement in operating conditions has been made in the past three years on the National Railways of Mexico, according to S. W. Fisher of Chicago who completed on March 1 a two-month study of car service on the railways in Meico. The improvement in freight service was brought about through the lengthening of engine runs, the inauguration of fast freight runs, the making of telegraphic reports of car movements and the compilation of more detailed operating statistics. Mr. Fisher found that during December, 1927, the average miles per car per day for all standard and narrow-gage cars had increased to 34.2, the mileage for system and foreign standard-gage cars had reached 38.9 miles per car per day and the foreign standard-gage car mileage was 52.2 miles per car per day. The ratio of the loaded car mileage to the total car mileage was 66.5.

President Anxious for Consolidation Legislation

President Coolidge has let it be known that he is anxious for the enactment of a railroad consolidation bill at this session of Congress. He has advocated such legislation in several messages to Congress and he is represented as believeing now that many of the railroads are holding in abeyance plans for extensions and improvements because of the uncertainity of the situation. He has been kept in touch with the work done by the House committee on the Parker bill and is understood to feel that there are favorable prospects for action on it.

The House committee on interstate and foreign commerce has been working on the finishing touches of the revised Parker bill, which it had been expected might be reported out this week, but further consideration of the bill was postponed until another meeting on March 27. The sub-committee appointed by the Senate committee on interstate commerce is awaiting the results of the work of the House committee and if the bill is passed at an early date in the House may be able to recommend the bill to the Senate committee without much change and without the necessity for further hearings.

Discussion of Boiler Pitting — Dispatching

The Western Railway Club program for the meeting of March 19 included the presentation of two papers: "Electro-Chemical Method for the Prevention of Locomotive Boiler Corrosion" by L. O. Gunderson, chemical engineer, Chicago & Alton, and "The Dispatcher Controlled Signal System for Train Operation" by W. B. Rudd, Union Switch & Signal Co. Mr. Gunderson explained with the assistance of lantern slides the theory and application of a system of pitting prevention which has been developed on the Chicago & Alton. An electric current, obtained from the headlight generator, is introduced into the locomotive boiler, passing between two insulated wrought iron anodes and the boiler heating surfaces which serve as the cathode. These surfaces are plated with arsenic injected into the boiler as a soluble arsenic compound in the feed water, a combination described as having the effect of setting up a counteracting force to the electro-chemical action induced by bad water. This system is claimed to have completely prevented pitting in all boilers so equipped and has recently become standard practice on the Chicago & Alton. In the course of his remarks, Mr. Gunderson estimated that the pitting of tubes and boiler sheets is costing the railroads from 12 to 15 million dollars annually.

The discussion following Mr. Gunderson's paper was brief but revealed much curiosity concerning the use of arsenic in water treating work, the principal point in this discussion coming from Fred Horstmann, Dearborn Chemical Company, who said that arsenic has previously been used successfully in pitting prevention without assistance from electrical or other means.

Mr. Rudd had on hand an example of a train dispatcher's machine and an automatic train graph recording device which he explained in the course of his talk. Following this paper, a motion picture was presented explaining in detail the operation of the dispatcher control system.

Consolidated Southwestern Order Revised

The Interstate Commerce Commission on March 21 issued its supplemental report in the Consolidated Southwestern Cases, disposing of the large number of petitions for reconsideration, reopening, or modification filed by shipping interests and carriers. Though the new report

carries a considerable number of changes, they are largely changes in details. The commission does not disturb its general rate readjustment plan for the Southwest as provided by the original report, which covered the class rates and the rates on many commodities between points in Oklahoma, Arkansas, Texas, and Louisiana west of the Mississippi River, and parts of Kansas and Missouri, and between the Southwest and states east and north of the Southwest. This report, as was the original, is by Commissioner Lewis. The changes made consist largely of individual rates and groupings and are designed still further to simplify and bring into proper relationship various commodities and classes. Minor errors are corrected.

Petitions filed by the carriers for a general ten per cent increase in the rates prescribed in the original report are denied. The increases were asked on the ground that the revised rates carried too heavy cuts and such a preponderance of reductions over increases as to mean substantial revenue losses to the carriers and particularly those of the Southwest. The report finds that a large number of the rates presented by the carriers to show heavy cuts are not the rates in effect and are much higher. The report further finds that the presentation of the carriers was otherwise defective in that rates cited as being severely cut often apply between points where there is little or no movement of the particular commodities to which they apply, whereas rates in the territory in which the movement occurs are lower.

With two exceptions the commission also denies the petition of the carriers that the rates on the six classes below third be made higher percentages of first class than were prescribed in the original report. The two exceptions are fifth class, which is raised from 38 per cent of first class to 40 per cent, and class C, which is raised from 27½ per cent to 30. These changes are partly made to bring the structure into greater harmony with rate structures in other territories.

The majority of the petitions seeking changes in the rates which had been prescribed for various commodities are denied, but modifications are made respecting agricultural implements, barrels and kegs, broom corn, bagging and ties, sulphuric acid in carboys, common barnyard manure, paper and paper articles, waste paper, vinegar in barrels, oyster shells, and certain fruits and vegetables. As to a few other commodities the proceeding is reopened for further hearing.

The time accorded the carriers for revision of rates on the numerous articles for which rates were not specifically prescribed in the earlier report is extended to December 10, 1928. The order in the proceeding is similarly postponed as to northbound rates prescribed for articles produced or manufactured in the Southwest to permit further consideration in conferences between carriers and shippers.

Various financially weak railroads are authorized to add arbitraries to the rates prescribed for standard lines.

The prior report also prescribed an adjustment of ocean and rail rates between north Atlantic seaboard territory and the Southwest in connection with certain steamship lines operating between north Atlantic ports and south Atlantic and Gulf of Mexico ports. Upon consideration of certain petitions filed by north Atlantic seaboard and Gulf port shipping interests by the steamship lines, that angle of the proceeding is reopened for further hearing, which will be held and covered by supplemental report.

The report preserves the definite plan of eliminating the causes which led to the complaints of unlawful prejudicial and preferential rate relationships, and of according to shippers and localities like rates for like services. The investigation has revealed many existing rates for given distances two or three times as high in one part of the territory as in other parts, notwithstanding that transportation conditions are found to be substantially similar throughout the Southwest and western and southern Kansas and southern Missouri. In order to afford time in which to publish tariffs embodying the revisions and changes in an orderly way, the effective date of the order is made July 8 instead of May 16. The new tariffs are to be posted 45 days in advanace of the effective date.

The report is unanimous with the exception that Commissioner McManamy expresses the opinion, in a general concurrence, that the rates on certain fresh fruits and vegetables are higher than is consistent with the mandate of the Hoch-Smith resolution. The modified rates, however, on the average represent reductions from present rates. Continuation of present carload minimum weights on certain fruits and vegetables, instead of the higher classification minimums, is provided. This was a change much desired by petitioning shippers.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 186 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF JANUARY, 1928 AND 1927

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1928	1927	1928	1927	1928	1927	1928	1927	1928	1927
Average number of miles operated	239,552.72	238,603.95	59,320.32	59,474.58	5,620.92	5,616.97	40,016.74	39,570.24	134,594.74	133,942.16
Revenues:										
Freight	$337,382,289	$358,104,014	$144,673,707	$158,720,898	$17,899,225	$20,659,563	$47,477,727	$50,281,261	$127,331,630	$128,442,292
Passenger	a 78,482,953	b 85,971,083	40,109,237	42,986,121	1,589,631	1,918,552	11,372,116	13,156.428	25,411,969	27,909,982
Mail	7,817,395	7,871,426	2,921,984	2,954,997	211,947	195,739	1,183,322	1,180,661	3,500,142	3,540,029
Express	8,125,652	8,803,675	3,557,151	4,109,826	204,230	197,579	1,116.339	1,112,872	3,247,932	3,383,398
All other transportation	15,398,804	15,813,485	8,548,571	8,763,514	164,999	188,355	926,207	1,015,844	5,759,027	5,845,772
Incidental	9,497,989	10,236,212	4,961,950	5,320,197	337,159	373,281	1,168,937	1,348,238	3,029,943	3,194,496
Joint facility—Cr.	1,096,195	1,236,207	458,404	524,552	10,483	10,890	124,431	169,850	502,877	530,915
Joint facility—Dr.	375,389	449,084	137,784	138,224	2,818	3,140	29,610	31,797	205,177	275,923
Ry. operat'g revenues	457,425,888	487,587,018	205,093,220	223,241,881	20,414,856	23,540,819	63,339,469	68,233,357	168,578,343	172,570,961
Expenses:										
Maintenance of way and structures	58,365,355	59,942,357	25,000,969	25,689,511	2,895,903	3,152,788	8,921,170	9,765,157	21,547,313	21,334,901
Mainten'ce of equipm't	97,617,496	106,235,013	45,324,163	51,586,814	4,511,998	5,125,789	12,947,057	13,705,106	34,834,278	35,817,304
Traffic	10,472,133	9,861,690	3,823,817	3,628,771	284,318	242,542	1,968,747	1,852,293	4,395,251	4,138,084
Transportation	176,940,105	191,777,831	82,567,853	92,593,619	5,844,345	6,606,794	23,660,322	25,523.998	64,867,585	67,053,420
Miscellaneous operat'ns	4,647,319	4,828,780	2,225,064	2,319,838	81,919	88,313	593,954	631,508	1,746,382	1,789,121
General	16,303,688	16,331,725	7,311,762	7,585,513	622,888	551,932	2,107,748	2,131,629	6,261,290	6,062,651
Transportation for investment—Cr.	962,278	986,927	168,667	184,416	12,919	18,317	97,951	212,733	682,741	571,461
Ry. operat'g expenses	363,383,818	387,990,469	166,084,961	183,219,650	14,228,452	15,749,841	50,101,047	53,396,958	132,969,358	135,624,020
Net revenue from railway operations	94,042,070	99,596,549	39,008,259	40,022,231	6,186,404	7,790,978	13,238,422	14,836,399	35,608,985	36,946,941
Railway tax accruals	28,533,901	29,484,311	11,069,693	11,270,409	1,677,350	1,782,763	4,146,290	4,135,603	11,640,568	12,295,536
Uncollectible ry. rev's	92,858	103,163	48,595	29,604	1,142	1,552	13,497	14,421	29,624	57,586
Ry. operating income	65,415,311	70,009,075	27,889,971	28,722,218	4,507,912	6,006,663	9,078,635	10,686,375	23,938,793	24,593,819
Equip't rents—Dr. bal.	6,874,928	6,634,329	3,821,173	3,719,454	d 447,716	d 375,581	582,987	753,094	2,918,484	2,537,362
Joint facility rent—Dr. balance	1,906,631	1,959,450	968,202	930,603	142,500	94,279	d 74,424	56.649	870,353	877,919
Net railway operating income	56.633,752	61,415,296	23,100,596	24,072,161	4,813,128	6,287,965	8,570,072	9,876,632	20,149,956	21,178,538
Ratio of expenses to revenues (per cent)	79.44	79.57	80.98	82.07	69.70	66.90	79.10	78.26	78.88	78.59

a Includes $3,269,214 sleeping and parlor car surcharge. b Includes $3,340,524 sleeping and parlor car surcharge. d Deficit or other reverse item.
Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Traffic

The Great Northern plans to establish freight and passenger service on its new line between Klamath Falls, Ore., and Bend about May 1.

The twenty-first annual dinner of the Traffic Club of Chicago was held at the Palmer House on March 15. William R. Dawes, president of the Chicago Association of Commerce, spoke on "New America."

The Missouri Pacific will operate a five-car dairy and poultry train on a 31-day tour through Missouri, Kansas, Colorado, Oklahoma, and Arkansas beginning April 4. The trip will include 57 stops for exhibits.

The Chicago, Burlington & Quincy has added observation cars with glass enclosed platforms to the Blackhawk Limited operating between Chicago and the Twin Cities and the Nebraska Limited operating between Chicago and Lincoln, Neb.

The Interstate Commerce Commission has granted a petition filed by short line railroads in the intermountain and Pacific coast territories for a further hearing and reconsideration of its railway mail pay decision with respect to rates on the lines of the Arizona Southern, Central of Oregon, Death Valley, Holton Interurban, Amador Central, Mount Hood, New Mexico Central and Tonopah & Tidewater.

Senator Gooding, of Idaho, and the Idaho Rate Association have filed a complaint with the Interstate Commerce Commission attacking all the freight rates to and from the state of Idaho as unreasonable, in violation of section 1 of the interstate commerce act, and unduly prejudicial and discriminatory, as compared with other rates, in violation of sections 2 and 3 of the act. The commission is asked to establish such rates as it shall deem reasonable and just.

The Detroit & Ironton was indicted on March 15 at Detroit by a Federal grand jury for alleged violation of the Elkins law. According to the bill the railroad failed to charge demurrage on shipments of material over its tracks in May, 1925. The shipments were made by the Raymond Concrete Pile Company which held a contract for the construction of foundations for buildings at the Fordson plant. Each load was made a basis for a separate count in the bill.

An agreement between the Dominion government, and the province of Alberta for the transportation at a low rate of coal from Alberta to Ontario during the "off" season, when eastbound traffic is light was announced last week by Charles Stewart, Minister of the Interior at Ottawa. The operation will be in the nature of a test supervised by the Board of Railway Commissioners. The rate will be $6.75 per ton, effective for three months a year for three years, costs being carefully checked and the railways reimbursed by the Ministry of Mines for any losses met in handling the business.

Refrigeration and Heating Charges to be Investigated

The Interstate Commerce Commission has ordered an investigation of the "justness, reasonableness and lawfulness" of the charges of all common carriers by railroad subject to the interstate commerce act applicable to the protection against heat or cold of perishable freight, such as fruits, vegetables, berries and melons, from points in California, Oregon, Washington, Idaho, Nevada, New York, Arizona, Utah, Colorado and Texas, on the lines which secure their supply of refrigerator cars, in whole or part, through contract or other arrangements with the Pacific Fruit Express Company, or the Atchison, Topeka & Santa Fe Railway, to destinations in the United States. The inquiry also includes "the character, extent and cost of such protective service with a view to prescribing such just and reasonable charges therefor as may appear to be warranted." The proceeding is to be assigned for hearing at such time and places as may hereafter be directed.

Gooding Long and Short Haul Bill

Senator Gooding, of Idaho, on March 20, submitted to the Senate from the committee on interstate commerce a favorable report on his bill, S. 1263, to amend the long and short haul rule of section 4 of the interstate commerce act. The bill is somewhat less drastic than the similar bills which had been offered by Senator Gooding at previous sessions of Congress, and which have been heretofore defeated, and no hearings on it had been held by the committee at this session.

It provides that "No common carrier shall be authorized to charge less for a longer than for a shorter distance for the transportation of passengers or of a like kind of property over the same line or route in the same direction, the shorter being included within the longer distance, on account of water competition through the Panama canal, either actual or potential or direct or indirect: *Provided*, That such authorizations, on account of water competition through the Panama canal, as may be lawfully in effect on December 5, 1927, shall not be required to be changed, except upon the further order of the commission: *And provided further*, That the provisions of this paragraph shall not apply to rates on import and export traffic, including traffic coming from or destined to a possession or dependency of the United States."

In his report Senator Gooding said in part: "The interstate commerce act was passed to stop discriminations in freight rates so as to give every part of this country an equal opportunity to develop their resources. Through the interstate commerce act, we have stopped rebating to individual shippers but we are still permitting rebates to communities in the West, and this, in the judgment of the committee, is prejudicial to the best interests of the whole country."

Foreign

American Firm Gets Contract For Bolivian Line

The Bolivian government has awarded a railroad construction contract to Kennedy & Carey, of New York. The construction will be a link between the high plateau section of Bolivia and the fertile Amazon Valley district, between which there has been no railroad communication heretofore.

The railroad, going from Cochabamba to Santa Cruz, a distance of approximately 300 miles, will represent an investment by the government of around $35,000,000, funds for which come from the proceeds of a loan placed in the United States in 1927.

The contract awarded is that for the construction of the first section of the new railroad, from Cochabamba to Aiquile, a distance of approximately 100 miles. This section will bring the railroad from the plateau to the beginning of the Amazon plain.

Rail-Motor Cars on Hungarian State Railways

Rail motor car service, which was inaugurated by the Hungarian State railways early in 1926 to meet operating conditions caused by the rearrangement of the country's boundaries, has grown popular. The standard type motor car with one trailer car has been introduced to take care of passenger traffic, freight trains being handled by steam locomotive as previously. The decrease in operating expense attendant on the introduction of these units has permitted a material improvement in service between the communities where heretofore it was not considered economic to be running full trains, according to H. L. Groves, commercial attaché at Vienna in a report to the United States Department of Commerce.

At present 21 rail motor cars are operated by the State railways, of which five are of the four-axle 150-hp. type and 16 are of the two-axle 80-90-hp. type. The smaller unit has proved to be generally more economical, particularly where traffic is limited. The fuel consumption of the larger type is rather heavy and about equals in cost that of a small steam locomotive. Therefore a new small type steam locomotive is being constructed for the state railways which, it is expected, will eventually serve as a substitute for the heavier rail motor cars of the two-axle 80-90-hp. type which have been ordered.

Indian Railway Operations

The fiscal year ended March 31, 1927 proved to be a record traffic year for the railways of India, with a large reduction in operating expenses. Revised estimates indicate that during the current fiscal year passenger earnings will exceed the previous year by approximately $7,000,000 and freight earnings by approximately $14,000,000. The railway budget for 1928 includes approximately $13,773,-

000, for improving track and strengthening bridges for the purpose or increasing heavier train load traffic with more powerful locomotives, and approximately $51,319,000 for new construction projects. During 1927, 636 miles of new line were opened and it is expected that 800 miles will be opened this year. The railways have ample cars to carry all traffic, even in the busiest season. The strong financial position of the State Railways has permitted reductions in third class passenger fares amounting to about 2 mills per mile, effective immediately. There will be a 15 per cent reduction in parcel and baggage rates and some reduction of freight rates on kerosene, gasoline, motor vehicles, manures, oilcakes, crude sugar, grains, and seeds, effective about June. Private railways are considering the desirability of making similar reductions.

New Line in Africa

A railway approximately 360 miles long, connecting Brazzaville with Pointe Noire in French equatorial Africa is being constructed. Large returns from this line are expected from the day of its completion, as a part of the traffic of the congested Congo Railway will be diverted to this route, according to reports to the Bureau of Domestic and Foreign Commerce. It will not only tap directly the productive regions of eastern Gabun and the Middle Congo, but, by assuring transportation from Brazzaville to the sea, should encourage development in the sections served by the river transportation on the Congo, Ubangi and their tributaries, converging at Brazzaville.

The only completed railway in the colony is the narrow gauge Decauville line, about 100 miles long, connecting Brazzaville with the copper mines at Minduli. This road was built and is operated by the Compagnie Miniere du Congo Francais and is not open to the public for the transportation of freight or passengers.

New Line in Sweden

A new line of railroad has been opened in Sweden which, for the first time, connects Stockholm with important port cities of northern Sweden from which wood and lumber pulp are exported. The new line, which is about 187 miles long, runs between Gefle and Hernosand, reducing traveling time from Stockholm to Hernosand from 13 hours to 9 hours. The new line was originally surveyed a number of years ago and it was intended to be a government owned line, but about 1900 a concession was let to a private concern, although work did not actually begin on the line until 1916. At that time, due to cost of materials and wage conditions for labor, it was doubtful just when the line would be completed. Finally, through the aid of the Swedish Riksdag, which put into the undertaking about $8,375,000 out of a total cost of construction of $13,250,000, the line has been completed. A number of serious natural difficulties impeded construction work throughout the whole course of the new line, the territory traversed being mountainous and full of rivers. There were 40 bridges constructed in the line, and in one instance over 104,000 cubic meters of stone were removed in the biggest cut ever undertaken in Sweden.

View of Biggest Cut in Sweden

THE CLEVELAND RAILWAY CLUB will hold its next meeting on April 2 at the Hotel Hollenden, Cleveland, Ohio, when a paper will be read on "Prevention of Rust on Steel," by T. J. Fay, president of the Fay Metal Patch Company.

A Fill in Shallow Water on the Swedish East Coast

Equipment and Supplies

Locomotives

THE UINTAH has ordered one 2-6-6-2 Mallet type locomotive from the Baldwin Locomotive Works.

THE CHICAGO, WEST PULLMAN & SOUTHERN is inquiring for a six-wheel switching locomotive.

Passenger Cars

THE CHICAGO AURORA & ELGIN is inquiring for 10 interurban cars.

THE CHICAGO SOUTH SHORE & SOUTH BEND is inquiring for 10 interurban cars.

THE CHICAGO RAPID TRANSIT COMPANY is inquiring for 150 motor cars and 150 double-end trailers.

THE ST. LOUIS-SAN FRANCISCO has ordered 5 gas-electric rail motor mail and baggage cars, to be equipped with Electro-Motive Company's single 400-hp. power plants. The car bodies will be built by the St. Louis Car Company.

THE NEW YORK CENTRAL has issued inquiries for 119 passenger train cars for service on the various lines of the system as follows:

Number	Type	Road
10	Coaches	New York Central
5	Coaches	New York Central
4	Coaches	C., C., C. & St. L.
3	Pass. & Bagg....	Boston & Albany
6	Dining	Pitts. & Lake Erie
10	Baggage	Peoria & Eastern
20	Baggage	Boston & Albany
19	Horse	New York Central
30	Milk	New York Central
10	Motor Car Bodies	New York Central
2	Bagg. & Mail....	Rutland

Freight Cars

THE SOUTHERN PACIFIC is inquiring for 10 dump cars.

THE CHICAGO & NORTH WESTERN has ordered 500 automobile car bodies from the Standard Steel Car Company and 500 from the General American Car Company.

Iron and Steel

THE PENNSYLVANIA will receive bids until 12 o'clock noon, March 27, at Philadelphia, Pa., for track fastenings and bridges.

THE ATCHISON, TOPEKA & SANTA FE has ordered 1,800 tons of structural steel for an office building at Amarillo, Tex., from the Mosher Steel & Machinery Co.

Machinery and Tools

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for one 36-in. drill press and one semi-portable grinder.

THE GEORGIA has ordered a 48-in. 500-ton, double end wheel press, from the Niles-Bement-Pond Company.

Inquiry for this equipment was reported in the Railway Age in the issue of March 10.

THE AMTORG TRADING CORPORATION is inquiring for 15 flat cars of 30 tons' capacity.

THE ATLANTIC COAST LINE is inquiring for 200 phosphate cars.

THE PERE MARQUETTE'S program for 1928 includes the purchase of 20 steel dump cars of 30 cu. yd. capacity.

THE MANGANEFEROUS IRON COMPANY, has ordered 4 air dump cars of 20 cu. yd. capacity from the Koppel Industrial Car & Equipment Company.

Signaling

THE CINCINNATI, NEW ORLEANS & TEXAS PACIFIC ordered from the General Railway Signal Company, 25 intermittent inductive auto-manual train control engine equipment.

THE READING has contracted with the Union Switch & Signal Company to install automatic block signals on its double track line between SX tower, Shippensburg and Lurgan, Pa.; the work involves ten color light signals. Extensive changes are also included under the contract at the SX interlocking.

THE SOUTHERN has given an order to the General Railway Signal Company for 44 intermittent inductive auto-manual train control engine equipments, 28 being for shipment to Spencer, N. C.; 15 to Atlanta, Ga., and one to Jackson, Tenn. Orders were also placed with the same company for five train control engine equipments for locomotives being built for the Southern at Schenectady, and for one for use on the Mobile & Ohio railroad.

THE DENVER & RIO GRANDE WESTERN has placed a contract with the General Railway Signal Company covering the installation of direct current color light absolute permissive block signaling between Maxwell and Helper, a distance of seven miles and double track signaling for forward and reverse traffic between Helper and Colton, Utah, 18 miles. A contract has also been given to the same company for the installation of direct current automatic block color light signaling between Tennessee Pass, Colo., and Minturn, Colo., 21 miles.

Miscellaneous

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon, March 28, at Roanoke, Va., for about 101 cast steel side frames; 10 cast steel truck bolsters; 100 wrought steel wheels, and for its requirements from April 1 to June 30, 1928, the following: Couplers and parts; brake shoes; locomotive steel tires; wrought steel pipe and requirements for one year on certain renewal parts for electrical equipment, electrical apparatus, etc., and repairs to electrical apparatus and repair parts for mechanical stokers.

Supply Trade

The **Hopkins-Benedict Company,** Railway Exchange Building, Chicago, has been appointed sales representative of the **Anchor Company,** Milwaukee, Wis.

P. P. Barrett, has been appointed representative for the **Reading Iron Company,** Reading, Pa., in the Cincinnati territory. Mr. Barrett's headquarters are at Indianapolis, Ind.

A. L. Roberts, formerly with the railroad sales department of the **Central Alloy Steel Corporation,** Massillon, Ohio, has joined the development and research department of the **International Nickel Company,** New York, and will devote his time to railroad development work.

R. O. Schaffer representative of the Verona Tool Works, Chicago, has resigned to become assistant sales manager of the **Du-Wel Steel Products Company,** with headquarters in the Railway Exchange Building, Chicago.

The Crane Company, Chicago has established a new line of plumbing material for railroad coaches, club buffet and sleeping cars and a new line of bathtub and shower bath fixtures for private cars. This new plumbing division will be under the supervision of **John B. Jordan** and **Fred W. Tenton.**

Robert J. Deneen and **Frederic Attwood** were elected vice-presidents of the **Ohio Brass Company,** Mansfield, O., at a meeting of the board of directors on February 7. Mr. Deneen is in charge of the company's sales activities in the Chicago district, while Mr. Attwood is in New York in charge of the eastern sales district.

The Jefferson Electric Manufacturing Company and the Chicago Fuse Company have been consolidated and a new organization formed under the name of the **Chicago-Jefferson Fuse & Electric Co.,** with office at Laflin and Fifteenth streets, Chicago. **J. A. Brennan** is president of the new company, **A. R. Johnson** and **A. E. Tregenza** are vice-presidents and **J. C. Daley** is treasurer.

The executive offices of the **Worthington Pump & Machinery Corporation,** also its export sales department and New York district sales department, will be removed from 115 Broadway to 2 Park avenue, New York City, about April 1. The general sales office and the advertising department have been removed to its plant at 421 Worthington avenue, Harrison, N. J.

The **Hammond Bolt & Nut Co.,** Hammond, Ind., has bought the bolt, nut and rivet department formerly owned and operated by The Illinois Car & Manufacturing Co. The officers of the company are as follows: **M. J. McDonough,** president, **E. M. Joyce,** vice-president, **M. L. Hunt,** treasurer and **Charles Aaron,** secretary. The company will be operated under practically the same management as when this department was owned and operated by The Illinois Car & Manufacturing Co.

Charles W. Beaver of Stanford, Conn., formerly sales manager of the Yale & Towne Manufacturing Company, has been elected president, treasurer and general manager of the **Lockwood Manufacturing Company,** South Norwalk, Conn. Mr. Beaver served from 1901 to 1925 with the Yale & Towne Manufacturing Company. He is a past president of the Railway Supply Manufacturers' Association and a past president of the American Supply & Machinery Dealers' Association.

The Carbic acetylene floodlight, the Carbic acetylene generator, and other Carbic equipment utilizing acetylene, formerly sold by the Carbic Manufacturing Company, Duluth, Minn., will in future be distributed exclusively by the **Oxweld Acetylene Company,** 30 East Forty-Second sreet, New York. The processed carbide in cake form, sold under the trade-mark Carbic, for Carbic lights and generators, will be distributed exclusively by the **Union Carbide Sales Company,** New York, through its chain of warehouses.

The **Larkin Packer Company** has purchased all the property and the entire assets of the **Davis Boring Tool Company, Inc.,** St. Louis. Tentative plans call for the separate operation of both plants with the Davis Boring Tool Company preserving its identity as a division of the Larkin Packer Company. General offices will be maintained at the Larkin plant. Under the new organization all executive heads of the former Davis Company are eliminated and sales territories are being revised to include representatives in every principal center.

C. I. Auten, manager of the steel building department ofthe **Truscon Steel Company,** Youngstown, Ohio, has been elected vice-president in charge of sales in the standard building division and will have jurisdiction over the sales of structural steel, steeldeck rofing and transmission structures. **M. T. Clark,** manager of the sash department, has been elected vice-president in charge of sales of the steel window division. **C. D. Loveland,** manager of the Pittsburgh district has been elected vice-president in charge of distribution in New Jersey with headquarters at Newark.

Interstate Iron & Steel Company

The annual report of the Interstate Iron & Steel Company, Chicago, for the year ending December 31, 1927, shows a net profit for the year of $409,783 as compared with $900,278 in 1926. Earnings after deducting all expenses, state and federal taxes and reserves except plant depreciation, interest, bond discount and expense totaled $1,190,810 as compared with $1,722,987 in 1926. The reserve for depreciation was $532,447 in 1927 and $523,349 in1926. The interest on bonds

and notes paid and accrued and the discount and expense on bonds issued written off during the year amounted to $248,579 as compared with $299,360 in 1926.

Chicago Pneumatic Tool Company

The Chicago Pneumatic Tool Company's annual report for 1927 shows net profit transferred to surplus of $1,210,107 as compared with $1,226,837 in 1926. The comparative income and profit and loss account for the company and its subsiliaries follows:

	1927	1926
Manufacturing profits (after providing for depreciation of machinery, etc., in the amount of $178,306 for the year 1927)	$4,571,494	$4,390,327
Deduct: General selling and administrative expense, (including transfer to reserve for Federal Taxes $102,500 for the year 1927)	3,297,405	3,125,244
	$1,274,088	$1,265,082
Add: Miscellaneous income, interest on bank deposits, etc.	75,335	59,528
	$1,349,424	$1,324,611
Deduct: Interest on borrowed money including amortization of discount on bonds	139,317	97,774
Net profit transferred to surplus	$1,210,107	$1,226,837

American Steel Foundries

The annual report for 1927 shows a net income for the year of $4,076,093 as compared with $4,675,596 in 1926, the amounts being added to surplus. The surplus account as of December 31, 1926, which totaled $12,990,889, was increased, after adding the net income, to a total of $17,066,983. Preferred stock dividends amounted to $609,910 and common stock dividends $2,708,235, which left a net surplus of $13,748,838. Assets totaled $56,167,320 of which current assets amounted to $20,520,218 and real estate, buildings, plant, machinery, tools, equipment, patents and good will after deducting depreciation, $32,660,990. Current liabilities amounted to $2,816,576. The condensed income statement with comparisons with 1926 follows:

	1927	1926
Earnings from operations, after deducting manufacturing, selling and administrative expenses and federal taxes	$4,483,654	$5,173,448
Deduct: Depreciation	935,319	893,824
Net profit from operations	$3,548,334	$4,279,624
Add: Miscellaneous income: Interest, discount and exchange, etc.	186,827	106,134
Income from investments.	366,565	316,129
	$553,392	$422,263
Total profit and income	$4,101,727	$4,701,887
Deduct: Net earnings of subsidiary company appertaining to outstanding minority stockholdings	25,663	26,092
Net income carried to surplus	$4,076,093	$4,675,796

R. P. Lamont, president, in his statement to stockholders, said in part:

The volume of business placed during the year was the smallest in 27 years, with two exceptions, and the total combined purchases of cars and locomotives for the three-year period—1925, 1926, 1927—were less than for any other three-year period since 1900, with the exception of the years 1919, 1920 and 1921.

At the same time the railroads have again satisfactorily handled a large volume of traffic, though not so large as in 1926, and there has been at all times an ample surplus of cars and locomotives. As stated in previous reports, there are a number of reasons for this unusual condition. The loss of short haul passenger and freight traffic to the automobile and truck, the more efficient handling of its equipment by the railroads, the larger capacity and better design of cars and locomotives built in recent years, the heavier loading and quicker unloading of cars, have all been contributing factors.

It is interesting to note, however, that the daily car mileage for 1927—30.7—is only 0.3 per cent greater than in 1926, and the increased average capacity only 0.7 per cent greater than at the end of 1926. It is probable that practical limits are being reached in these directions. The limit of influence of the automobile on railroad buying of equipment has probably not been reached but there are evidences that it may not be so important a factor from now on as it has been in the last 10 years. In any event, the purchase of freight cars for the past seven years has been at a rate, which, if continued, raises an interesting speculation as to the average life of the car and would seem to indicate 30 years as such life. This figure is obviously high since purchases are influenced by factors already considered and by the large number of existing cars of designs and capacities not meeting present standards.

Our total tonnage shipped in 1927 was 509,862, compared with 553,826 in 1926, and 638,843 in 1925. Net profits were $4,076,093; in 1926 they were $4,675,795; and in 1925, $4,669,736. The profit per ton was $7.99; in 1926, $8.44. The preferred dividend was earned more than six and one-half times. After deducting this dividend, the earnings represent $3.84 per share of common stock. The balance sheet shows a satisfactory ratio of quick assets to liabilities of 7 1/3 to 1, compared to 6 1/2 to 1 in 1926; working capital is $17,777,777 and surplus, $13,748,838.

There were no important additions to property during the year except the completion of the Cincinnati and Salt Lake plants of the Griffin Wheel Company, but there was spent for maintenance and repairs and charged to costs, $2,091,380; this figure for 1926 was $2,263,885.

Obituary

Walter B. Leach, president and general manager of the **Hunt-Spiller Manufacturing Corporation,** Boston, Mass., died after a prolonged illness at his home in Brookline, Mass., on March 13. Born in Boston on August 30, 1870, Mr. Leach spent his early years in the railroad shops of the Old Colony Railroad and the New York & New England,

Walter B. Leach

both now parts of the New York, New Haven & Hartford, and in 1902 he became master mechanic of the Boston and Albany at Springfield, Mass. On February 1, 1904, he was appointed general manager and treasurer of the Hunt-Spiller Manufacturing Corporation, later becoming president and general manager, which position he has since held.

Construction

CHICAGO, BURLINGTON, & QUINCY.—A contract for the construction of a four-track automatic electric fireproof coaling station of 400-ton capacity at the Western Avenue terminal, Chicago, has been let to Roberts and Schaefer Company, Chicago.

CINCINNATI UNION TERMINAL.—The Interstate Commerce Commission has approved this company's application for a certificate authorizing the construction of a new passenger terminal at Cincinnati, and connecting trackage, to be used by the Baltimore & Ohio, the Cleveland, Cincinnati, Chicago & St. Louis, the Chesapeake & Phio, the Pennsylvania, the Norfolk & Western, the Louisville & Nashville, and the Cincinnati, New Orleans & Texas Pacific.

DETROIT, GRAND HAVEN & MILWAUKEE—The Interstate Commerce Commission has authorized the Detroit, Grand Haven & Milwaukee to construct a line of railroad from Royal Oak to Bloomfield, a distance of 8.88 miles, all in Oakland County, Michigan, and authorized the abandonment by the applicant of that part of its existing line between the points mentioned, a distance, along the present route, of 9.1 miles, also wholly within Oakland County. The cost of the entire project is estimated at $3,071,350.

GALVESTON, HOUSTON & HENDERSON—This company has asked the Director of the Port of Houston (Tex.) for repmission to reconstruct its bridge over Buffalo bayou at Allen street, Houston, replacing a swing span with a fixed span having a 40-ft. vertical clearance above the water level.

KANSAS CITY, MEXICO & ORIENT.—Application has been made by this company to the Mexican government for permission to construct a bridge over the Rio Grande river between Del Rio, Tex., and Villa Acuna, Coah. It is planned to complete the construction of the line from San Angelo, Tex., to Del Rio, 120 miles, forming a through route into Mexico by connection with the National of Mexico at Villa Acuna. This involves construction of an extension from San Carlos, Coah, to Villa Acuna by the National of Mexico.

NEW YORK CENTRAL—An agreement has been reached with the officials of the City of Toledo (Ohio) for the elimination of a grade crossing at Central Avenue, Toledo, by the elevation of the railroad tracks at that point and the construction of a steel and concrete structure which will span a 54-ft. highway roadway and two 12-ft. sidewalks.

PANHANDLE & SANTA FE.—Plans are being prepared for the construction of a 12-story concrete, brick and steel office building at Amarillo, Tex. Outside dimensions of the building will be 90 ft. by 140 ft.

PENNSYLVANIA—Under an agreement with the Wabash and the owners of four produce companies this company will construct a union produce terminal at Fort Wayne, Ind., at a cost of about $350,000. The terminal proper will be made up of four two-story brick and concrete buildings, three of which will have outside dimensions of 50 ft. by 125 ft. and the fourth dimensions of 60 ft. by 125 ft. Each building will contain a refrigeration unit and will be provided with accompanying trackage facilities and platforms.

PORTLAND CANAL SHORT LINE.—H. H. Stevens, managing director of Vancouver Holdings, Ltd., has announced that following the purchase of this railroad by his company plans have been made for reconstruction from Stewart, B. C., to Bear River, 14 miles, in northern British Columbia. It is also planned to construct a seven-mile extension along Bear river to serve a number of mining developments.

WACO, BEAUMONT, TRINITY & SABINE.—Company forces have started the construction of extensions from Weldon, Tex., to Waco and from Livingston, Tex., to Port Arthur. It is intended that company forces will be employed on this project only until such time as a general contract for the 209 miles of extensions has been awarded when the present sections under construction will be taken over by a contractor.

THE RAILWAY Equipment Exhibit Association has been organized by representatives of a number of railway supply companies for the purpose of presenting an exhibit in the convention of the American Association of Railroad Superintendents at Memphis, Tenn., on June 12-15. J. Will Johnson of the Pyle-National Company, Chicago, has been elected chairman of the board of this association; C. M. Hoffman, of the Dearborn Chemical Company, Chicago, president; and F. W. Venton of the Crane Company, Chicago, secretary and treasurer.

* * *

A Seaboard Train at Lake City, Fla.

Financial

CHICAGO, ROCK ISLAND & PACIFIC.—*1927 Earnings.*—A preliminary statement of earnings for 1927 shows net income after interest and other charges of $12,564,830, equivalent after allowance for the dividends on the 7 and 6 per cent preferred stocks, to $12.10 per share on the outstanding common stock. Net income in 1926 was $11,515,881, or $10.62 per share. Selected items from the income statement follow:

CHICAGO, ROCK ISLAND & PACIFIC	1927	1926
Average mileage operated	.....	8,024
RAILWAY OPERATING REVENUES	$140,086,991	$137,911,415
Maintenance of way	$18,585,993	$17,145,109
Maintenance of equipment	27,586,675	28,607,808
Transportation	50,634,307	49,848,490
TOTAL OPERATING EXPENSES	$103,333,050	$102,812,256
NET REVENUE FROM OPERATIONS	$36,753,941	$35,099,160
Railway tax accruals	7,935,957	7,490,680
Railway operating income	$28,773,936	$27,539,860
Hire of freight cars, Dr.	4,104,905	3,761,214
Joint facility rents, Dr.	1,930,260	1,948,307
TOTAL	6,878,965	6,506,808
Balance before deduction of interest	24,272,802	22,991,500
Rent for leased roads, Cr.	$158,057	$161,009
TOTAL INTEREST	11,707,972	11,475,619
NET INCOME	12,564,830	11,515,881
Disposition of net income:		
Dividends: 7 per cent preferred	$2,059,547	$2,059,547
Dividends on 6 per cent preferred	1,507,638	1,507,638
Dividends on common stock (5 per cent)	3,717,900	.....
Surplus for year carried to profit and loss	$5,279,745	$7,948,696

DELAWARE, LACKAWANNA & WESTERN.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire and operate the Lackawanna & Montrose, extending from Alford Junction, Pa. to Montrose, 9.93 miles. Authority has also been granted to issue $130,500 capital stock consisting of 2,610 shares of par value to be exchanged for an equal number of shares of the Lackawanna & Montrose. The Lackawanna & Montrose has been controlled by the Lackawanna for over 35 years through ownership of capital stock. The Lackawanna owns 2,608 of the total 2,610 shares outstanding.

EDMONTON, DUNVEGAN & BRITISH COLUMBIA.—*New Purchase Proposal.*—The Canadian National and the Canadian Pacific have jointly made an amended offer to the Province of Alberta for the purchase of this railroad and the Central Canada. It is now proposed that the two railroads shall pay $8,000,000 for the capital stock, as in the previous offer, but interest on the full amount would start on January 1, 1929. Previously interest was to have been paid on only $1,000,000, starting with July 1, 1931, the amount on which interest would be paid increasing $1,000,000 each succeeding year until the full figure of $8,000,000 had been reached. The new offer states that the Canadian National and the Canadian Pacific are prepared to undertake during the next five years the construction of about 100 miles of branch lines and extensions in addition to the 40 miles of line mentioned in the previous proposal.

NEW YORK CENTRAL.—*Allocation of Short Lines.*—This company, in a brief filed with the Interstate Commerce Commission on the question of making provision for taking over connecting short lines in connection with its proposed lease of the Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis, has replied to the contentions of the short lines that are seeking to be allocated to the New York Central. The New York Central contends that "the commission may not use its power with respect to the granting or denial of applications for authority to acquire control of carriers applied for as a means of compelling applicants to acquire control of short lines not applied for." It also takes the position that the intervening short lines have failed to produce adequate data upon which the commission may find that the public interest requires their allocation to the New York Central or upon which the commission may prescribe terms and conditions upon which they should be included in the proposed plan. Briefs also have been filed by several short lines that are asking that provision be made for including them in the plan, the Federal Valley, the Boyne City, Gaylord & Alpena, the Chicago, Attica & Southern, the Southern New York, the Fonda, Johnstown & Gloversville, the Ulster & Delaware and the Owasco River.

PRESSED STEEL CAR—*Equipment Trust Certificates.*—A. G. Becker & Co., and Ames, Emerich & Co., Inc., have announced an offering of $1,200,000, series B, equipment trust certificates, principal and dividends guaranteed by the Pressed Steel Car Company. These certificates mature in semi-annual installments from September 1, 1928 to March 1, 1938, inclusive, and are priced to give a yield of 4 to 4.80 per cent. The equipment includes 500 new steel refrigerator cars, costing in excess of $1,500,000.

SEABOARD AIR LINE.—*Equipment Trust.*—The Interstate Commerce Commission has authorized an issue of $740,625 equipment trust certificates to be delivered at par to the Baldwin Locomotive Works and $246,875 deferred equipment trust certificates to be taken by the carrier. The equipment includes 25, 6-wheel switching locomotives having a total cost of $987,500.

ST. LOUIS-SAN FRANCISCO.—*Refinancing.*—This company has applied to the Interstate Commerce Commission for authority to issue under a new mortgage $110,000,000 of 4½ per cent consolidated mortgage bonds, of which $100,000,000 are to be sold at 94½ to Speyer & Co., J. & W. Seligman & Co., and the Guaranty

Company, and also to issue and sell $49,157,400 of 6 per cent preferred stock at par to common stockholders. The application stated that the purpose was to meet large maturities this year, to reduce the ratio of funded debt to capital stock, to reduce interest charges and simplify the capital structure. The proceeds of the sale of the stock and bonds, $143,657,400, are to be applied to the payment and redemption of outstanding issues and to reimburse the treasury. Authority also was asked for the authentication and delivery of $30,979,700 of prior lien mortgage bonds, to be pledged under the consolidated mortgage and to pledge under the same mortgage $20,496,500 of refunding mortgage bonds of the Kansas City, Fort Scott & Memphis, which in a separate application asked authority to issue the bonds. Authority also was requested by the Frisco to pledge from time to time $10,000,000 of the new bonds as collateral for short term notes. The securities to be retired are $40,547,818 of adjustment mortgage bonds, $35,192,000 of income mortgage bonds, $8,000,000 of notes and $7,500,000 of preferred stock, series A.

Acquisition.—The St. Louis-San Francisco in another application also asked authority to acquire control by purchase and to operate the properties of the Kansas City, Fort Scott & Memphis, the Kansas City, Memphis & Birmingham, the Kansas City, Clinton & Springfield, the Muscle Shoals, Birmingham & Pensacola and the Kansas City & Memphis Railway & Bridge Company, of which it owns or controls substantially all the outstanding stock. The properties are to be acquired, according to the application, at the approximate book values, and the consideration will be paid in part by assuming outstanding liabilities and cancelling obligations held by the applicant, without cash outlay. The application says that in connection with the creation of the new mortgage it desires to simplify its capital structure and eliminate the expense of maintaining separate corporate organizations and keeping separate accounts.

VIRGINIAN. — *Bonds.* — The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $1,948,000 first mortgage 5 per cent 50 year gold bonds.

Average Price of Stocks and of Bonds

	Mar. 20	Last week	Last year
Average price of 20 representative railway stocks..	120.61	117.61	106.55
Average price of 20 representative railway bonds..	97.22	96.95	93.90

Dividends Declared

Boston & Providence.—2½ per cent, quarterly, payable April 2 to holders of record March 20.

Midland Valley.—Common, $1.25, payable April 14 to holders of record March 31.

Minneapolis, St. Paul & Sault Ste. Marie, leased lines.—2 per cent, payable April 1 to holders of record March 20.

New York Central.—2 per cent, quarterly, payable May 1 to holders of record March 30.

United New Jersey Railroad & Canal Companies.—2½ per cent, quarterly, payable March 30 to holders of record February 29.

Officers

Executive

Robert S. Henry, director of public relations of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been promoted to assistant to the vice-president, with headquarters at the same point. He will have jurisdiction over industrial and agricultural development work and public relations.

Financial, Legal and Accounting

Lucian H. Cocke, Jr., who has been appointed general attorney of the Norfolk & Western, with headquarters at Roanoke, Va., was born on May 24, 1889, at Roanoke, Va. He was graduated from the University of Virginia in 1913. Mr. Cocke entered railway service on September 1, 1914, as law clerk with the Norfolk & Western, with headquarters at Philadelphia, Pa. On July 1, 1915, he was appointed assistant to the general attorney, being transferred to Roanoke as assistant general attorney on January 1, 1917, which position he held at the time of his recent appointment to general attorney.

Lucian H. Cocke, Jr.

E. J. Gallagher, assistant to the vice-president of the Boston & Maine, with headquarters at Boston, Mass., has been appointed assistant treasurer, succeeding **C. N. Marland,** promoted, with headquarters at the same point. Mr. Gallagher will also continue his duties as assistant to the vice-president in charge of finance.

C. N. Marland, assistant treasurer of the Boston & Maine, has been appointed treasurer, succeeding **H. R. Wheeler,** deceased, with headquarters at Boston, Mass.

Operating

S. Lewis Van Akin, who has been appointed joint superintendent of telegraph of the New York Central Lines, Buffalo and East, the Western Union Telegraph Company and the Great North Western Telegraph Company, with headquarters at New York, was born on October 11, 1874, at Lackawaxen, Pa. He entered railway service on March 28, 1890, as telegraph operator on the Erie, serving in that position until April 18, 1895. From the latter date until April 26, 1897, Mr. Van Akin served in a similar capacity on the West Shore (a subsidiary of the New York Central), and then returned to the Erie, where he again served as telegraph operator until April 28, 1900. He then returned to the West Shore as telegraph operator, remaining there until March 31, 1903. From April 1, 1903, until August 31, 1904, Mr. Van Akin was telegraph operator and testboard man for the American Telephone & Telegraph Company, and at the latter time became wire chief and manager of the West Shore, which position he held until January 19, 1906. He then became assistant superintendent of telegraph of the New York Central, which position he was holding at the time of his recent appointment as superintendent of telegraph.

Frank Over has been appointed assistant freight trainmaster of the Long Island, with headquarters at Jamaica, N. Y.

J. T. L. Brooks has been appointed acting trainmaster of the Council Grove and Salina districts of the Central Kansas division of the Missouri Pacific, with headquarters at Council Grove, Kan., until **G. R. Mabie,** recently injured, is able to resume the duties of this position.

J. D. Beaver has been appointed general superintendent of the Pittsburgh, Shawmut & Northern, with headquarters at St. Marys, Pa., succeeding **B. C. Mulhern,** deceased. **A. G. Geuder,** formerly assistant to the general superintendent, at St. Mary's, Pa., has been appointed assistant general superintendent, with headquarters which will be at the same point.

A. A. Dunphy, assistant superintendent on the Medicine Hat division of the Alberta district of the Canadian Pacific, with headquarters at Drumheller, Alta., has been transferred to the Calgary terminal, with headquarters at Calgary, Alta. Mr Dunphy succeeds **W. Thomas** who has been transferred to the position of assistant superintendent at Drumheller. **W. Manson,** assistant superintendent on the Regina division of the Saskatchewan district, with headquarters at Weyburn, Sask., has been transferred to the Lethbridge division of the Alberta district, with headquarters at Lethbridge, Alta., succeeding **C. C. Stibbard** who has been transferred over to the Regina division.

Traffic

J. T. Kingsley has been appointed general agent of the Chicago, Springfield & St. Louis, with headquarters at Pittsburgh, Pa.

Harry T. Harlow, who has been promoted to general passenger agent of the Erie, with headquarters at Chicago, was born on September 24, 1884, at Chicago. After attending the public schools in Chicago, and Cincinnati, Ohio, Mr. Harlow entered railway service on February 1, 1904 in the traffic department of the Erie. Since that time he has been continuously connected with the Erie for more than 24 years. Soon after his entry into railway service Mr. Harlow was appointed assistant city passenger and ticket agent at Cleveland, Ohio, subsequently occupying the positions of assistant city passenger agent at Chicago, traveling passenger agent at Memphis, Tenn., and at Kansas City, Mo., city passenger and ticket agent at Cincinnati, and city passenger agent at Chicago. In 1924 he was promoted to general western passenger agent at Chicago, a position he occupied until his further promotion to general passenger agent.

C. H. Garn, city passenger agent of the New York, Chicago & St. Louis at Ft. Wayne, Ind., has been promoted to general agent in the passenger department at St. Louis, Mo.

Frank H. Hocken, district freight and passenger agent for the Union Pacific at Spokane, Wash., has been appointed general agent for the Western Pacific at Salt Lake City, Utah, succeeding **G. I. Martin** who has been transferred to Reno, Nev., where he will serve as general agent for both the Western Pacific and the Denver & Rio Grande Western.

F. I. McNally, division passenger agent for the Wabash at St. Louis, Mo., has been promoted to assistant general passenger agent, with headquarters at the same point.

A. F. Roloson has been appointed foreign freight agent on the Baltimore & Ohio, with headquarters at Chicago, Ill., succeeding **Harry Atkinson,** promoted.

The office of superintendent of station service has been abolished by the Long Island. **R. W. Farrell** will continue as general baggage agent, reporting to the general passenger agent, with headquarters at Pennsylvania station.

Mechanical

J. D. Cousins has been appointed road foreman of engines of the Long Island, with headquarters at Jamaica, N. Y., succeeding **J. B. Ward,** retired.

The Erie has abolished the positions of superintendent of locomotive operation and general supervisor of locomotive operation. **T. F. Howley,** formerly superintendent of locomotive operation, with headquarters at New York City, has been appointed supervisor of fuel and locomotive operation, with headquarters at the same point. **James Cunneen,** formerly general supervisor of locomotive operation, with headquarters at Hornell, N. Y., has been appointed district road foreman and fuel supervisor of the New York and Eastern districts, with headquarters at Hornell. **John A. Cooper,** formerly general supervisor of locomotive operation, with headquarters at Meadville, Pa., has been appointed district road foreman and fuel supervisor, Western district, with headquarters at Meadville.

R. W. Wray, master mechanic on the Pennsylvania at West Philadelphia, Pa., has been promoted to superintendent of motive power of the Lake division, with headquarters at Cleveland, Ohio, succeeding **W. Y. Cherry** who has been appointed superintendent of motive power of the Long Island, with headquarters at Richmond Hill, N. Y. **H. J. W. Kleine** has been appointed assistant master mechanic of the Pittsburgh division of the Pennsylvania, with headquarters at Conemaugh, Pa.

Engineering, Maintenance of Way and Signaling

H. B. Hoyt, superintendent of the timber preserving plant of the Buffalo, Rochester & Pittsburgh, with headquarters at East Salamanca, N. Y., has been appointed division engineer, with the same headquarters, succeeding **C. H. Griggs,** who has been transferred to the position of superintendent of the timber preserving plant, with headquarters at Bradford, Pa.

Guy W. Harris, who has been promoted to chief engineer of the Atchison, Topeka & Santa Fe system, with headquarters at Chicago, has completed 30 years of railway service, are in the engineering departments of the Santa Fe and its subsidiaries. He was born on March 1, 1878, at Neosho Falls, Kan., and attended high school at Kansas City, Mo., entering railway service as a rodman on the Santa Fe Pacific at Williams, Ariz., in

Guy W. Harris

1898. In the following year he became a rodman on the Santa Fe at Las Vegas, N. M., being advanced to transitman at Pueblo, Colo., in 1900 and to assistant engineer at the same point in July, 1903. From January, 1906, to March, 1909, Mr. Harris was assistant engineer in charge of reconstruction work on the Pecos & Northern Texas and the Southern Kansas of Texas at Amarillo, Tex., and at the end of that period he was appointed chief engineer of the P. & N. T. On April 1, 1912, he was appointed chief engineer of the Coast lines of the Santa Fe, with headquarters at Los Angeles, Cal. During federal control of the railroads he acted as corporate chief engineer of the Santa Fe, with headquarters at Chicago, being promoted to assistant chief engineer of the system with headquarters at Chicago, on March 1, 1920. Mr. Harris's promotion to chief engineer became effective on March 1.

J. E. Fletcher, track supervisor of the Erie, has been appointed assistant engineer, maintenance of way department, with headquarters at Huntington, Ind.

Purchases and Stores

C. H. Dyson, assistant fuel agent of the Baltimore & Ohio, with headquarters at Cincinnati, has been appointed fuel agent, with headquarters at Baltimore, succeeding **E. A. Foos,** deceased.

Robert J. Elliott, director of purchases of the Northern Pacific since September, 1926, will retire under the pension regulations of that company on April 1. At that time the position of director of purchases will be abolished and **C. C. Kyle,** who will continue in his present position of purchasing agent, will assume charge

Robert J. Elliott

of the purchasing and stores department. Mr. Elliott was born at Louisville, Ky., in 1865, entering railway service as a clerk in the accounting department of the Northern Pacific in March, 1892. After serving for a short time on the staff of the general manager Mr. Elliott was promoted to general storekeeper, with headquarters at St. Paul in 1905. Two years later he was advanced to assistant purchasing agent, becoming purchasing agent in 1921. Mr. Elliott will have completed 36 years in the service of the Northern Pacific at the time of his retirement.

Obituary

William A. Gore, formerly general manager of the Virginian, who died at his home in Norfolk, Va., on February 24, was born on August 31, 1874, at Knoxville, Tenn. He entered railway service in May, 1889, and until 1896 served as telegraph operator of the East Tennessee, Virginia & Georgia (now a part of the Southern). From 1896 until 1897 he was chief dispatcher of the South Atlantic & Ohio (also a part of the Southern), and from the latter time until October, 1898, was a dispatcher on

William A. Gore

the Southern at Knoxville, Tenn. He then became operator and dispatcher on the Louisville & Nashville at East Nashville, and on the Illinois Central at McComb, Miss. From March, 1899, until April, 1901, Mr. Gore was trainmaster of the Chicago & Southeastern, at the latter time became chief dispatcher on the Lake Erie & Western (now part of the New York, Chicago & St. Louis) at Lima, O. From 1902 until March, 1903, he was chief clerk to assistant superintendent on the Union Pacific at Evanston, Wyo., and also served as dispatcher on the same road. For a year he served as chief dispatcher on the Seaboard Air Line at Releigh, N. C., and from March, 1904, until March, 1907, he was trainmaster on the Second division. From March, 1907, until October, 1914 he was superintendent. Then until December, 1917 he acted as receiver of the Orangeburg Railway, and from January, 1918 to November, 1918 he served as general superintendent of the Vaughn Construction Company. On April, 1919, he became superintendent of the Norfolk & Portsmouth Belt Line at Norfolk, Va., from April, 1919, to December, 1920, he served as superintendent of the Norfolk division of the Virginian being transferred to the New River division, in the same capacity, on the latter date, where he served until July 1, 1921, when he was appointed general manager, which position he held up to the time of his death.

Charles H. Hueston, treasurer of the Des Moines Union, with headquarters at Des Moines, Iowa, died of pneumonia at his home in that city on March 11. Mr. Hueston, who was 67 years old, had been assistant treasurer and treasurer of the Des Moines Union since 1918 and for 12 years previous he had been superintendent of the Des Moines Western.

Bernard C. Mulhern, general superintendent of the Pittsburg, Shawmut & Northern, died in Buffalo, N. Y., on March 15, following an operation. Mr. Mulhern was born on November 9, 1860, at Lock Haven, Pa. He was educated in the public schools and entered railway service in 1876 as telegraph operator on the Philadelphia and Erie division of the Pennsylvania. From November 25, 1882, until June 1, 1888, Mr. Mulhern served as telegraph operator and train

Bernard C. Mulhern

dispatcher on the Western New York & Pennsylvania (now a part of the Pennsylvania) at Buffalo, N. Y., and from June 1, 1888, to July 1, 1896, as chief dispatcher and trainmaster of the Buffalo division of the same road. On the latter date he entered the service of the Pittsburg, Shawmut & Northern as trainmaster and remained in that position until May 1, 1906, when he became superintendent of the same road. On January 1, 1914, he was appointed general superintendent, which position he held up to the time of his death.

* * * *

On the Union Pacific at North Platte, Nebr.

Two Sections—Section Two

Railway Age

Motor Transport Section

Devoted to the Co-ordination of Railway and Highway Service

FIRST HALF OF 1928—No. 12 MARCH 24, 1928 SEVENTY-THIRD YEAR

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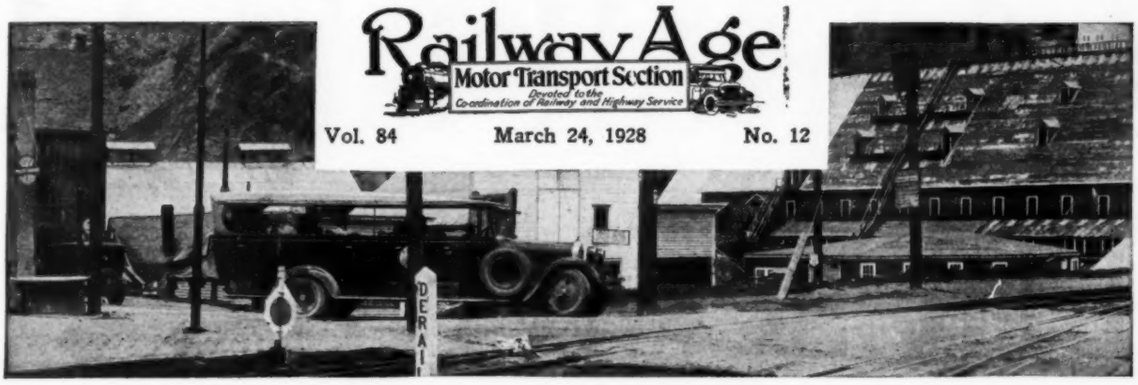
Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service
Vol. 84 March 24, 1928 No. 12



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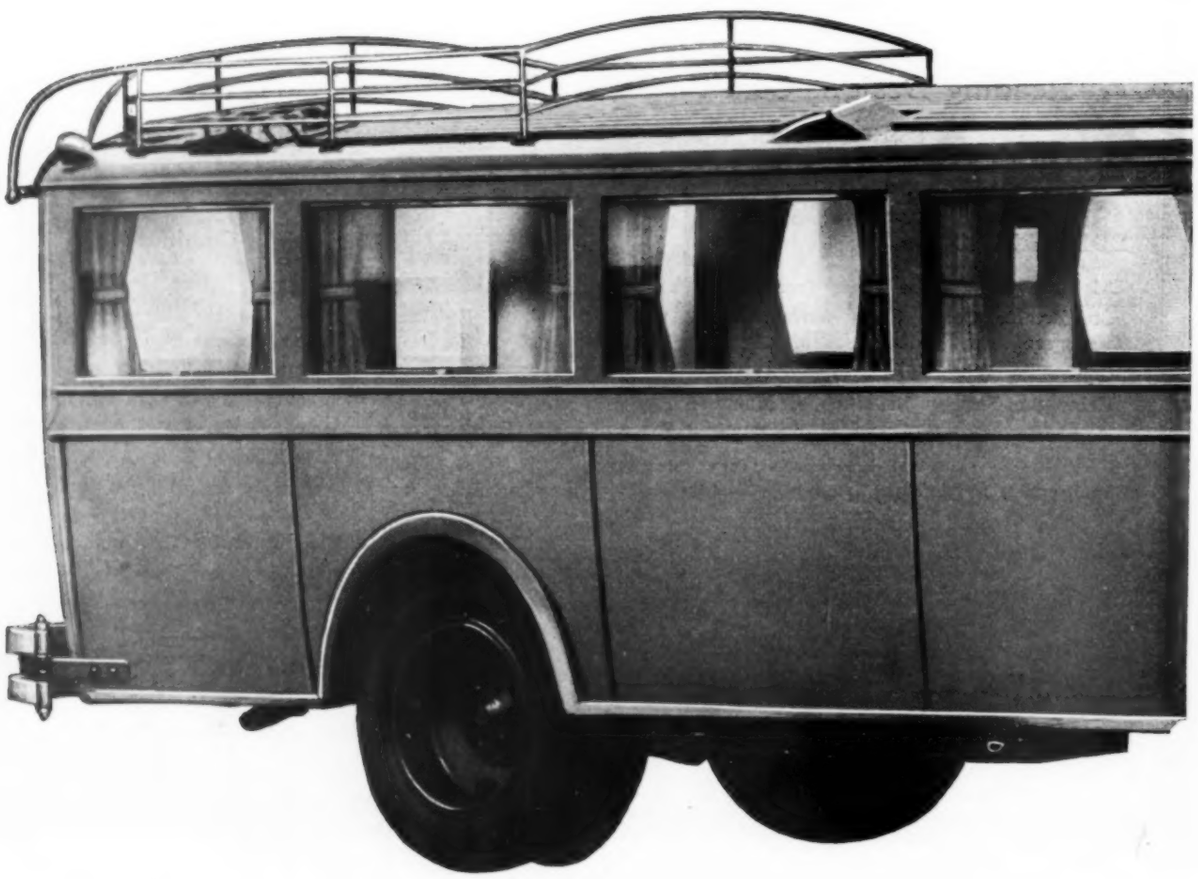
After all is said: Those with . . . Experience know -



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Air Transport and the Motor Transport Division

ONE of the acts of the Motor Transport Division at its organization meeting in Chicago in January was to pass a resolution recommending to the American Railway Association the study of air transportation in its relation to the railways by one of the divisions of the association. The assumption is that if the association sees fit to sanction a study of air transport, the Motor Transport Division will receive the assignment. Certainly it would be the logical branch of the association to carry on such a study. The problems arising from the development of air transportation are not greatly dissimilar to those which have arisen with the spread of highway transportation. Furthermore, it is expected that the future will see air transportation and highway transportation working closely together. One of the problems which have come up already is how to get passengers to and from the flying fields quickly and economically. Finally, the chief task in connection with the extension of air service is to co-ordinate it with rail and highway service. The Motor Transport Division, made up of officers from virtually all departments of railroading, and having as its basic purpose the co-ordination of two forms of transportation, could readily extend its activities to cover the aerial side of the business of moving passengers and cargoes. The sentiment of the members of the division seems to be heartily in favor of air transport studies. The subject seems to be of sufficient importance at this time to justify the official attention of some division of the association, preferably, for the reasons mentioned, the Motor Transport Division. Certainly developments in this new form of transportation are rapid enough to warrant study by the railroads, and that at an early date.

Comfortable Coach Seats Attract More Passengers

TOO much care cannot be taken in the selection of seats for motor coaches operated by the railways in order to insure that they will always be found comfortable by passengers. This does not mean that all motor coaches should have seats of the parlor type, although these in general are more comfortable than the undivided coach-type seats. Coach-type as well as parlor-type seats are now available which have deep cushions and springs and are so designed as to give maximum comfort. The choice of the appropriate type of seat, therefore, will be governed in general by the nature of the service in which the motor coach is to be operated. Railway operators of motor coaches agree that the longer runs, such as those requiring more than two hours for the journey between terminals, require coaches fitted with parlor-type seats, while the shorter runs can be covered as well with city-type coaches containing undivided coach-type seats. It should not be forgotten, however, that when two or more companies are competing for business over the same route, the type of seats installed in the motor coaches of each company has a very appreciable effect upon the division of the business. It has been proved many times that a coach fitted with parlor-type seats will rarely fail, in competition for traffic, to win over a coach fitted with less luxurious seats. Independent operators of motor coaches have recognized this, with the result that practically all of them use motor coaches of the parlor type, thereby forcing the hands of other operators and compelling them to furnish similar equipment in order to have any chance of securing traffic. The result of this situation is a trend toward the general use of parlor-type seats in motor coaches, but it will not be surprising, in the case of the shorter runs, if there is a turn in the other direction when motor coach transportation settles down and its practices become standardized.

Controlling Motor Truck Operating Costs

WHEN a railway purchases or contracts for a motor truck, its purpose usually is to reduce the cost of carrying on some operation, whether it is the movement of freight or the handling of company supplies. It is obvious that if this purpose, whatever it is, is to be accomplished to the fullest extent the operation of the motor truck must be efficient. An excellent way of controlling motor truck operating costs and at the same time disclosing inefficiency in operation immediately, lies in the budgeting of the various costs incident to the operation of the truck, followed by supervision to insure that the budget costs are not exceeded. This plan of controlling truck operating costs through budgeting is embodied in the Federal system of truck expense control prepared by the Federal Motor Truck Company, which is described in this issue of the *Motor Transport Section*. This system is adaptable to any kind of motor truck operation and, of course, to any kind of motor truck. It affords a day-by-day check of the performance of the truck and of those having its performance in charge, and consequently makes possible the immediate correction of faults affecting the operating costs adversely. Cost accounting, which means more than merely subdividing the total operating costs and

then forgetting them, is one of the most effective means of securing efficiency and economy in operation. The use of a budget in connection with the cost accounting system is another step forward which every operator can afford to take.

Using the Factory Branches of Manufacturers

THOSE railways which are operating as yet only small fleets of motor coaches and motor trucks will find it advantageous, if they have not so found it already, to utilize the facilities of the factory branches of the manufacturers of their equipment in the making of heavy repairs and in reducing inventories of spare parts. Only the largest motor vehicle operators can afford to install the special machinery necessary to making repairs to coach and truck major parts. Smaller companies will have only infrequent use for such equipment and will not get their money's worth out of them. The factory branches usually have every kind of special machinery useful in making major repairs efficiently, and in no matter what part of the country a railway may be it will in all probability have such a service station close by, since there are a great many of them scattered over the United States. These branches will usually render fast service in supplying coach and truck parts, making the storing of large quantities of such parts in the operator's shop unnecessary. These and other services of the manufacturers can be utilized with profit by railway operators of automotive highway equipment.

Numbering the Days of the "Fly-by-Night" Coach Lines

PERHAPS as a result of the investigation of the Interstate Commerce Commission into motor transportation conditions in the United States, there has been lately a spreading feeling among the public that "fly-by-night" motor coach operators should be made to legitimize their services or be put out of business. Many clippings from newspapers which have begun to wage a war in the press against the abuses of public confidence on the part of such operators have come to our attention. Better business bureaus, associations of commerce and other civic organizations, as well as numerous governmental bodies, have openly condemned the practices of irresponsible coach line operators and have taken steps to have them either put under rigid regulation or forced to discontinue service. Numerous instances have been cited wherein such lines, apparently offering a responsible service, have collected money from patrons to cover long journeys only to leave them stranded and without recourse when still far short of their destinations. In other cases, such lines have attracted passengers by parking handsome new modern motor coaches outside their hotel lobby stations, and after loading them have run the new equipment only around the corner, forcing the passengers to transfer there to dilapidated relics of the earliest days of highway transportation. The passage by Congress of legislation providing for the regulation of interstate motor coach lines would be more effective than anything else in calling a halt on this sort of victimizing of the public.

Transportation Methods Constantly Changing

THE history of the development of the various forms of transportation is familiar to railway officers. The striking feature of it is that transportation methods have never been static; on the contrary, they have been subject to frequent and drastic changes. Each change has had as its purpose and usually as its effect either greater speed in the transportation of persons and commodities or greater economy in the cost of furnishing transportation, frequently both. The events of the past few years have furnished a number of significant instances of this constant change and advancement in transportation methods.

On the side of passenger transportation, there has been the advent of the automobile, followed a few years later by the development of the motor coach. The reasons for the popularity of the motor coach are well known. It offers a form of service more convenient and in many instances faster than other forms of transportation, while at the same time, on account of its low operating cost, it can furnish this improved service at an equal or lower rate. The motor coach has been adopted by the railways, first of all because it provides a more convenient service than that provided in general by their passenger trains, and, in the second place, because it can replace economically as well as satisfactorily certain services more expensive when furnished on the rails. In other words, the motor coach has effected a marked change in passenger transportation methods because it fulfils both of the requirements—convenience and economy.

Almost concurrent with the development of motor coach transportation for passengers has been the advance of motor truck, and tractor and trailer, transportation for freight. Here again we have a unit capable of furnishing transportation of a sort superior in some respects to that provided by other transportation units. In handling small freight shipments over short distances the motor truck often has proved itself superior, both in speed and in economy, to the freight car. The motor truck is today carrying a vast amount of l. c. l. freight formerly handled by the railways. In many instances, due to the recognition on the part of many railways of the efficient form of transportation provided by the motor truck, this change in the nature of the carrier has come about through the initiative of the railways themselves. In terminals and out along the lines the motor truck is doing a steadily increasing amount of work. It furnishes another example of a change in transportation methods as the result of the development of a new tool capable of furnishing certain forms of transportation faster and more economically than the older forms.

Now comes the freight container. Here is a medium of transportation which is arousing no little interest among the railways. In operation on several roads, the freight container, designed to furnish car-load transportation service for less than car-load shipments, has proved successful. Experience with the freight container has indicated, its advocates claim, that it offers an improved transportation service and furthermore a more economical one. Quite recently several additional railways have made arrangements for offering freight container service to their patrons. Is the freight container to bring about another radical change in transportation methods?

Control Truck Operating Costs by Budgeting

Practical method of regulating expenses adaptable to any accounting system devised

By A. M. Pearson
Federal Motor Truck Company, Detroit, Mich.

IN USING most systems of motor truck cost accounting in the past, operators have gone to much trouble to do things wrongly, although it is much easier to do them correctly. The first mistake which has been made in truck cost accounting has been in the conception of the vehicle as a transportation unit instead of as a money investment. The second mistake has been that there has not been a separation of the cost of merchandise distribution from the cost of truck operation.

Everything in any business activity must ultimately resolve itself into sums of money. In this way a motor truck becomes, for instance, $5,000 instead of a five ton truck. When money is expended for gasoline, oil and tires and maintenance, it only means the outlay of so much money for these items and they should be considered as money.

Truck transportation has two clearly defined aspects. There is the traffic side or the load which brings in the income, and the operating side, including the expenditure of money to develop the income. This is, of course, simple, but it is the failure to be conscious of the distinct separation of merchandise distribution and the individual truck operation that has confused motor truck cost accounting in the past.

The Federal System of Truck Expense Control

A motor truck is capable only of producing wheelage. It is not the duty of the vehicle to assume any burden of the merchandise distribution outside of that of which its mechanical specifications are capable. Such things as routing, loading, discharging, and despatching are subjects of the distributing department of which the truck is only one factor. When this department develops delays and other inefficiencies in the traffic element, the cost is not chargeable to the truck but to the cost of distribution. Until such time as distribution costs and truck operation costs are segregated there can be no true costs on either distribution or truck operation.

The Federal System of Truck Expense Control was developed for this reason. The budgeting method was employed because in any system of cost accounting it is the most comprehensive and the one least liable to errors. Mere tabulation of expenditures is not sufficient; there must be a factor which gives the control of the operation itself. The budget system accomplishes this adequately if correctly administered.

Truck operation is measured today in terms of pennies, not dollars. The Federal system accepts and promotes this side of the question. The average operator is seldom conscious of what small sums mean to yearly costs. The sum of 25 cents a day saved on a single truck amounts to $75 in a year. When figured in terms of one fleet operation involving 12,000 vehicles, it amounts to the sum of $900,000.

Recognition of this is what makes expense control so essential. Operators as a rule attempt to reduce truck costs in larger sums. To accomplish this the first attack is usually made on maintenance. This is dangerous for the reason that it has a tendency to restrict the type of wheelage, and consequently to impair the character of the service. The proper routine is to establish the smaller sum in the budget and then to raise the standard until the desired result in cost reduction is achieved.

In truck operation all movements are fundamentally based on the mile. This is the guide from which every element is to be judged and controlled; until we know mileage all the costs are uncertain as to their reason for being present. The mileage budget is the estimated minimum of miles which the truck should produce daily, if it is to be profitable as transportation equipment. When the mileage budget is determined the cost items are relative in proportion to their meeting the mileage requirements.

Advantages of the System

Each truck must be treated as an individuality. There is no such thing as an average cost. The average cost is a trick with words since it washes out the bad with the good and sets up a false standard. When operation costs are controlled by an incorrect standard, the accounting results are largely speculative and do not render the true picture of the situation. True costs are the expenses incurred by an individual truck, either when running or idle, and no other interpretation is correct.

The advantages of the Federal System of Truck Ex-

pence Control are that it fits into any truck cost accounting method, that it is simple, and that it enables quick comparison of the expense of operating any truck with its previous records or with the records of other similar trucks. Furthermore, it provides a means of controlling the cost of operation of each truck. There is a great difference between knowing merely how much it

Table I—Fixed Daily Charges

Capacities	1,000 lb.	1 Ton	1½ Ton	2 Ton	3 Ton	5 Ton	7 Ton
Interest	$0.20	$0.20	$0.30	$0.35	$0.40	$0.50	$0.75
Fire and Theft Insurance	0.30	0.30	0.35	0.40	0.50	0.75	1.00
Liability	1.35	1.35	1.70	1.70	1.70	2.15	2.15
Garage	0.50	0.50	0.75	0.75	1.00	1.25	1.50
License	0.08	0.08	0.10	0.15	0.20	0.30	0.35
Wages	5.00	5.00	5.00	5.00	6.00	7.00	7.00
Totals	$7.43	$7.43	$8.20	$8.35	$9.80	$11.95	$12.75

costs to move freight and in using these expense records to get the most out of the hauling equipment at the least cost. The system is designed not only to show what costs are, but to tell what they ought to be and how truck expense can be kept within proper bounds.

The basis of the system is a daily operating report. It may be modified to suit the conditions of individual operators. The classifications shown on this form are by no means as complete as those provided for in many accounting systems. Separate accounts may be carried for each tire, and in connection with repairs separate accounts may be kept covering axles, engines, transmissions, etc. It is recommended, however, that for practical use in connection with the budget system, these charges be totaled so as to make the most condensed

cause of the variations which come in operation. Tires are usually depreciated by the mile. This is logical, and if such a plan is followed the same principle of depreciation applies to the entire truck because it wears out as the tires wear out according to the number of miles that it operates. One truck may run 30,000 miles in a year and another of the same make and capacity 10,000 miles in the same period. Obviously the truck with the greater mileage will wear out faster than the other one, so that it cannot be expected that both trucks will stay in service the same number of years.

There is a very important advantage connected with the budgeting of trucks on the basis of the cost per mile. The more mileage obtained in a given number of hours, the more valuable the truck will be and the less the overhead carried on the operation. The truck is doing its job only when it is rolling, for when it is idle it becomes a warehouse on wheels, and a truck is too expensive to use as a warehouse. A truck should be considered then on the basis of wheelage.

If a truck is depreciated on the basis of an estimated number of miles of life, an attempt will be made to get this mileage condensed into a shorter space of time. This will give the greatest amount of profit on the truck through the reduction of the general overhead.

Table II—Variable Charges

Capacities	1,000 lb.	1 Ton	1½ Ton	2 Ton	3 Ton	5 Ton	7 Ton
Gasoline	$0.03–0.30	$0.03–$.30	$0.04–0.40	$0.04 –0.40	$0.05–0.50	$0.075–0.75	$0.10–1.00
Lubricants	0.01–0.10	0.01–0.10	0.01–0.10	0.015–0.15	0.02–0.20	0.03 –0.30	0.04–0.40
Tires	0.03–0.30	0.03–0.30	0.04–0.40	0.04 –0.40	0.05–0.50	0.10 –1.00	0.15–1.50
Depreciation	0.04–0.40	0.04–0.40	0.05–0.50	0.05 –0.50	0.06–0.60	0.075–0.75	0.10–1.00
Maintenance	0.04–0.40	0.04–0.40	0.05–0.50	0.05 –0.50	0.05–0.50	0.10 –1.00	0.15–1.50
Total per Mile..	$0.15	$0.15	$0.19	$0.195	$0.23	$0.38	$0.54
Per 10 Mile Day	1.50	1.50	1.90	1.95	2.30	3.80	5.40

For budget purposes, each item of expense as shown by the operator's records over a definite period, such as a month, is reduced to terms of one day. Mileage is the basis for most of the information called for in the

BUDGET
MONTHLY FIXED CHARGES

Insurance _____
Interest and License _____
Garage _____
Total _____

Daily Operating Report

Total Costs this Month _____
Total Mileage this Month _____
Operating Costs per mile _____

Truck No. _____
Driver No. _____
Month _____
Year _____

DATE	MILES	WAGES	GAS-ELECTRIC	LUBRICANTS	TIRES	MAINTENANCE	DEPRECIATION	FIXED CHARGES	TOTAL
Budget									
1									
2									
3									
29									
30									
31									

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The Daily Operating Report Form

classification possible. The object of the daily operating report is to bring together the essential facts about the cost of each truck in terms of money. This arrangement will be found most convenient and enlightening for it gives a clear picture of what is happening every day to each truck.

Setting up a budget calls for a constant as a means of measuring the expense of operating a truck. The only constant we have in transportation is the mile, and this may be used to express the day's work of the truck in terms of the number of miles it operates. Attempting to set up budgets on a daily or hourly basis, or to work out depreciation on a yearly basis, is entirely wrong be-

daily operating report.

It is suggested that the budget set up under each column in the operating report be written in red ink in order to make it stand out in comparison with actual results. In the first column is set up a budget of miles for the truck. This figure may represent an average day's mileage, or it may be the mileage which the operator thinks the truck should cover. If the budget is fixed at 70 miles and the next day the truck operates only 60 miles, it is immediately apparent that there has been a loss for some reason of 10 miles of wheelage during that day's operation, and this, of course, means a loss of 10 miles of income of some kind. This loss may

be perfectly legitimate, but the main factor in the situation is that the signal is given to investigate this loss of wheelage at the time that it occurs and not 30 days later, on the basis of some average which might come out of the truck operations.

On the same basis, if the wages of the driver are budgeted at $5 a day and the actual wages are $7, it is quite evident that the overtime is questionable because in this instance the wheelage is 10 miles short. This makes a comparative condition which necessitates investigation and which comes out immediately.

The column for the gasoline or electricity budget is equally illustrative. If the truck has a budget of 10 miles to the gallon, then at 18.8 cents a gallon the daily budget for gasoline would be $1.32. If the gasoline charge develops to be $2.82 then it is evident that something is wrong because the mileage is 10 miles short. This might happen for several reasons. It might be the gas line, carburetor, leaky gas tank, traffic conditions, or any one of the number of other things, but the main point is that this appears as a hazard almost immediately after it occurs and it can be corrected at once.

Similar deductions may be made by watching the expenses for lubricants and tires. If oil expense runs ahead of the budget, the truck may be pumping oil. If tires give out sooner than they should, this is apparent at once and there is a chance to correct the trouble. Too fast wearing out of tires may be due to bad mounting of the body, poor inflation, misalinement of the front wheels, or defective casings.

Under the heading of repairs or maintenance, the records may be arranged to cover separately the engine, axles and other chassis units for information on repair costs. However, all repairs should be summarized on this report, even though they are more completely analyzed elsewhere.

Depreciation should be brought down to a mileage basis the same as other items, whatever method may be used in figuring it. After the life of the truck under the budget system is exhausted, the operator may then continue to charge up this item against the truck as long as it remains in operation, or the charge may then be omitted. The former method, however, avoids confusion. As the mileage increases, the depreciation is transferred to a reserve fund for replacement. Then at the end of the truck's estimated life, the money is at hand to replace the truck. Since the truck is then completely charged off, extra mileage may be obtained from it without investment, or it may be transferred into profit through salvage.

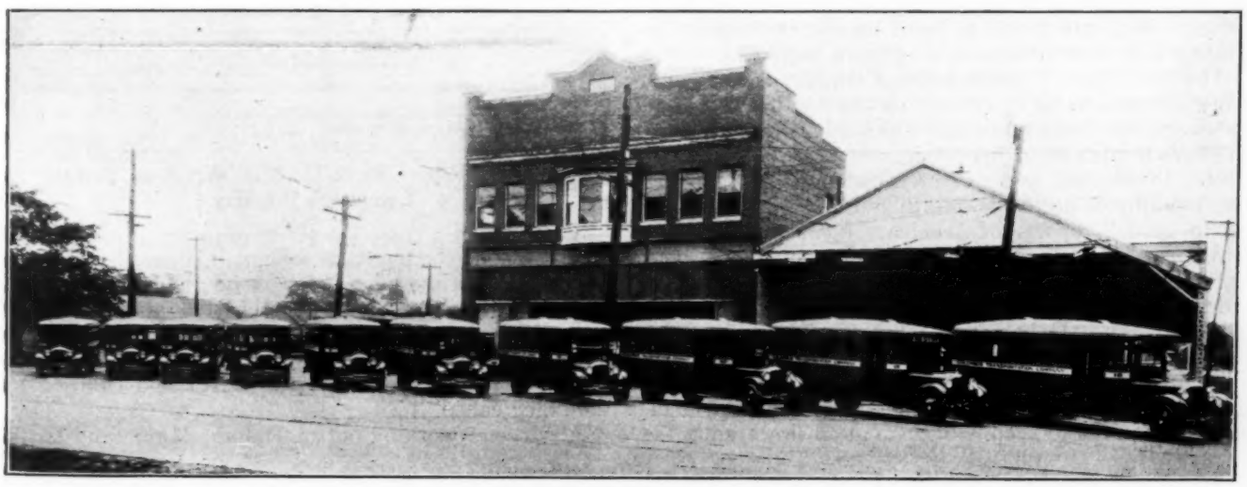
The fixed charges determined on a daily basis should include truck insurance, liability insurance, storage, interest, license fees, and other charges of this nature. Overhead may be included, if desired, and also wages, if there is little or no variation and it is not desired to keep a separate account of the driver's wages.

The sum of all the budget figures is entered in the last column. When all the columns are totaled at the end of the month, the operator can compare the actual expense with the budgeted expense, and the report for one truck against the reports for similar trucks.

If detailed and accurate information on an operator's trucks is lacking, a temporary budget may be set up by using the table of temporary operating budgets shown herewith. These figures do not apply to any particular trucks, but are furnished merely as illustrations and are not intended to be used for comparison, nor should they be used permanently. No one set of figures can serve all conditions. When a budget is made up on the basis of this table, it should be replaced the following month by a new budget drawn from the operator's record of the first month. The exact expense of each of his trucks will be of real value, while an arbitrary figure means little or nothing. Table I includes those items of expense which do not vary according to the extent to which the truck is used. There may be additional such charges, which should be included. Wages are included under fixed charges, but to allow for overtime and other variations, these are shown on the daily operating report as a separate item. Obviously wages should not be figured twice and it is left to the operator to consider this item either as a variable or as a fixed charge. No attempt is made to take overhead into consideration because of the wide difference in overhead charges.

Besides the above fixed charges there are other items of expense that vary according to the number of miles the truck is operated. These also are subject to correction if the operator has any specific information on any item. Table II, variable charges, is totaled to show the budget per mile and also per 10-mile day. If the truck under consideration averages 50 miles per day, the budget figure for this truck would be five times the total shown for a truck of the same capacity on the 10 mile basis. When the truck is used with a trailer, 20 per cent should be added for each trailer.

* * * *



Fleet of Studebakers in Service at Columbus, Ga.

Winter Road Conditions Increase the Accident Hazard

How the Northland Handles Accidents Involving Coaches

Explicit instructions to drivers and requirement of detailed reports prevent errors in procedure

CONSTANT carefulness will keep at a minimum the number of accidents involving transportation companies, but it rarely can eliminate them. A certain number may be considered almost inevitable. Particularly is this true of transportation companies operating on the highways, in view of the frequently congested condition of the roads and also of the fact that they are open to all kinds of drivers, including the careless as well as the careful.

Accidents involving the equipment of common carriers on the highways, including railway motor coaches and motor trucks, can cause an almost inestimable amount of trouble and expense if they are not handled properly. Proper handling means not only appropriate conduct on the part of the employees of the company at the scene of the accident, but also the rendering of full reports by them as to the nature and causes of the accident. Both are found to be of utmost importance in dealing with later actions arising from accidents.

The Northland Transportation Company issues complete instructions to its drivers on the handling of accidents and overlooks no details which might lead a driver to make a mistake in his procedure following an accident. In addition to his written instructions regarding the handling of accidents, Northland drivers are required to render reports of accidents upon forms which leave nothing to the discretion of the employees as to the information of every possible kind concerning accidents which is required by the company.

Drivers' Instructions

The Northland's instructions to drivers for the handling of accidents are printed on a card approximately four inches wide and eight inches long, which all drivers are required to keep with them at all times, since the company insists upon the most exact compliance with the instructions. According to these instructions, the drivers' first duty is to see that any injured persons are properly cared for and that the services of a competent physician are obtained or that the person injured is removed to the nearest hospital, if hospital care is required.

The particulars of every accident are required to be reported to a designated officer by telephone, either dur-

NORTHLAND TRANSPORTATION COMPANY
MISCELLANEOUS REPORT TO GENERAL MANAGER

BUS NO. ____ RUN NO. ____ LINE ____ DATE ____ 192__
DIVISION ____ LOCATION ____ DIRECTION ____ TIME ____ M.
WEATHER CONDITIONS ____ OPERATOR ____ BADGE No. ____

Signature of Employee Making Report ____

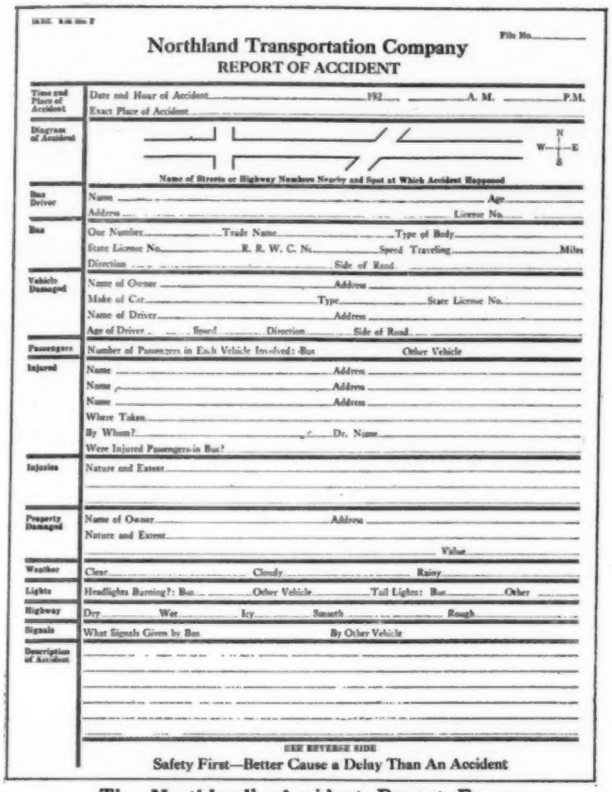
This blank must be used to report any damage to Company's property or any unusual incident. Show full particulars in order to convey a complete understanding.
Collision with other vehicles or injury to persons should be covered by Accident Report.
DO NOT USE THIS FORM TO REPORT ACCIDENTS.

Miscellaneous Report Form Used in Reporting Damage to Company's Property

ing the day or the night, as soon as it is possible for the driver to reach the nearest telephone after the accident occurred. Accidents must be reported by the drivers themselves and not through agents. The instructions make the point that charges on all telephone accident reports may be reversed by the driver and charged to the office called.

All drivers working out of Duluth, Minn., and north

and east of that point telephone messages regarding accidents to the manager at Duluth between the hours of 8:30 a.m. and 5:30 p.m., and to the garage foreman at Duluth at other times. All drivers out of Minneapolis, Minn., and on all branch lines north, west and south of that city, except those specified above, report accidents by telephone to the Northland dispatcher at Minneapolis, between the hours of 8:30 a.m. and 10:30 p.m. After 10:30 p.m., reports go to the foreman of the Northland garage at Minneapolis.



Northland Transportation Company
REPORT OF ACCIDENT

File No.

Time and Place of Accident — Date and Hour of Accident ..... 192.... ..... A. M. ..... P.M.
Exact Place of Accident .....

Diagram of Accident — N / W / E / S

Name of Streets or Highway Numbers Nearby and Spot at Which Accident Happened

Bus Driver — Name ..... Age .....
Address ..... License No. .....

Bus — Our Number ..... Trade Name ..... Type of Body .....
State License No. ..... R. R. W. C. No. ..... Speed Traveling ..... Miles
Direction ..... Side of Road .....

Vehicle Damaged — Name of Owner ..... Address .....
Make of Car ..... Type ..... State License No. .....
Name of Driver ..... Address .....
Age of Driver ..... Speed ..... Direction ..... Side of Road .....

Passengers — Number of Passengers in Each Vehicle Involved: Bus ..... Other Vehicle .....

Injured — Name ..... Address .....
Name ..... Address .....
Name ..... Address .....
Where Taken .....
By Whom? ..... Dr. Name .....
Were Injured Passengers in Bus? .....

Injuries — Nature and Extent .....

Property Damaged — Name of Owner ..... Address .....
Nature and Extent .....
Value .....

Weather — Clear ..... Cloudy ..... Rainy .....

Lights — Headlights Burning?: Bus ..... Other Vehicle ..... Tail Lights: Bus ..... Other .....

Highway — Dry ..... Wet ..... Icy ..... Smooth ..... Rough .....

Signals — What Signals Given by Bus ..... By Other Vehicle .....

Description of Accident

SEE REVERSE SIDE

Safety First—Better Cause a Delay Than An Accident

The Northland's Accident Report Form

Drivers are required to be supplied at all times with one or more of the books of forms provided for taking the names of passengers and witnesses. In every case of an accident to a motor coach carrying passengers, the driver must fill out one of these forms for each passenger and then obtain the passenger's signature upon it. Particular emphasis is laid by the Northland upon the fact that it is compulsory that this form be obtained whether or not any passengers claim injury at the time. The names of persons not passengers on the coach but who witnessed the accident are also required to be obtained on these forms. In case of collision with another car or vehicle, the driver must obtain the name and address of the driver and the license number of the other car involved.

The last paragraph of the driver's instructions for handling accidents reads as follows: "Driver should neither admit nor deny responsibility for any accident. If necessary to answer inquiries of this nature, simply advise person making inquiry that company's officers will decide the question of responsibility after a proper investigation."

Reports of Accidents

Northland drivers are required to fill out forms with spaces for detailed information regarding accidents. These are made in duplicate, the original going to the manager of operations and the duplicate to the claim department. At the top of this form are spaces to show the exact time and place of the accident. Below is a street diagram on which the driver must show the name of the streets or highway numbers nearby and must indicate the spot at which the accident happened. Following this are spaces for the name, age, address and license number of the driver and the number, make, type, state license number, railroad and warehouse commission number, speed and direction of the motor coach, and also the side of the road it was occupying at the time of the accident.

The next information required on the report involves the vehicle damaged, including the name and address of the owner, the kind of vehicle and its license number, the name, address and age of the driver, and the car's speed and direction. After this the coach driver must note the number of passengers in his motor coach and in the other vehicle. Following this are noted the names and addresses of those injured and information as to where they were taken and by whom, and, also as to the name of the attending doctor and whether the injured were passengers in the coach. Below this information are given the details of the nature and extent of injuries. Following this are given the name and address of the owner of the property damaged, and the nature and extent of the damage, including the value of the property.

The accident report then requires information as to the weather, the condition of headlights and tail-lights of both the motor coach and the other vehicle, the condition of the highway, and what signals were given by the coach and the other vehicle. This is followed by the driver's full description of the accident.

On the reverse side of the accident report are spaces in which the driver can describe the damage to the various parts of the motor coach and also to the various parts of the other vehicle, as well as the names and addresses of passengers in the coach, passengers in the other vehicle, bystanders, and occupants of passing vehicles. This report is signed with the name and address of the driver involved.

Report to Minnesota Commission

The Northland Transportation Company, in common with other highway carriers in Minnesota, is required to notify the Railroad and Warehouse Commission of Minnesota immediately by telegraph or telephone of accidents involving loss of life or personal injury, such reports to be followed by detailed reports on a form approved by the commission. This form is similar to some extent to the accident report form of the Northland and includes spaces for information as to the time and place of accidents, the name of the transportation company, the name and address of the driver, identification of the common carrier vehicle involved, the identification of other vehicles involved, the number of passengers in each vehicle, information regarding injured persons, the nature and extent of injuries, the nature and extent of damage to property, the names and addresses of witnesses, a full description of the accident, and complete details as to the damage to the common carrier vehicle and to the other vehicle. The commission emphasizes its requirements also of an accurate diagram of the accident and its scene.

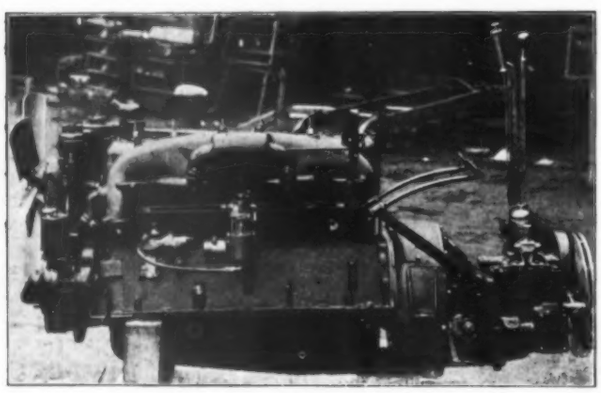
Miscellaneous Report of Property Damaged

In addition to its accident report form, the Northland has a miscellaneous report form to be used in reporting any damage to the company's property or any unusual incident, which form is not used, however, in the case

of collisions with other vehicles or injury to persons, these being covered by the accident report. Drivers make two copies of the miscellaneous report, the original going to the operating manager and the duplicate either to the safety supervisor or shop superintendent, according to the nature of the case reported. This form, which is reproduced herewith, contains spaces for the number of the motor coach, the number of its run, and the name of its line, the name of the division, the location of the coach at the time of the occurrence reported, its direction, the exact time, weather conditions, the name of the operator, and his badge number. Full particulars are required and the employee making the report signs it.

Studebaker Builds Lighter, More Powerful Motor Coach

THE Studebaker Corporation of America, South Bend, Ind., is now constructing a special motor coach chassis, Model 76, which is designed particularly for intercity operation and which is lighter and more powerful than the model 75 introduced last year. Like the earlier model, Model 76 has a wheel base of 184 in. but the new design weighs only approximately 4,600 lb., 800 lb. less than its predecessor. With a 20-passenger parlor car body and all tanks filled, the total weight of the new coach is approximately 7,760 lb., the body alone weighing less than 3,000 lb. with all equipment. Of this weight approximately 62 per cent is on the rear wheels and 38 per cent on the front wheels.



The Engine Has Been Improved to Give 30 Per Cent More Power

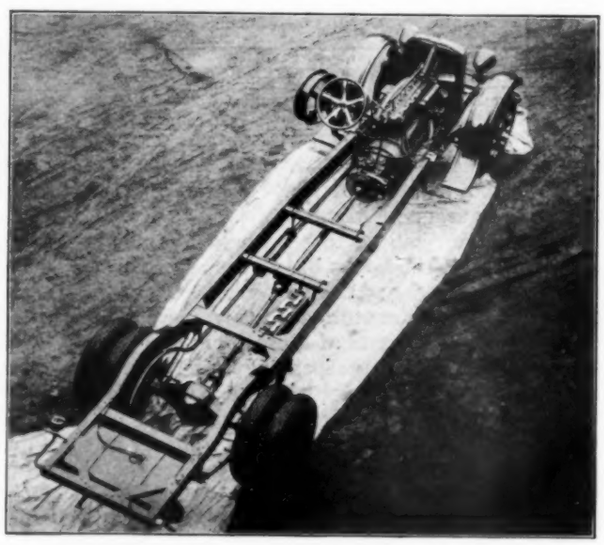
By various changes in the six-cylinder engine the power has been increased 30 per cent. This increase has been secured partly by raising the normal running speed of the engine to 2,800 r.p.m., and partly by introducing a wider opening in the inlet manifold, increasing the valve lift from 5-16 to 11-32 in., retiming the valves, and redesigning the cylinder heads to permit higher compression. The fuel supply is by the A. C. diaphragm-type pump driven off the camshaft.

Among the new features elsewhere in the chassis is the parking brake. In this brake a cast-steel disk of 14 in. outside diameter is mounted on the shaft, the braking being effected by a pair of shoes which clamp on each side of the disk. Support is furnished by a bracket mounted on the rear of the gearset housing, so that when the driver pulls on the brake lever the two shoes are forced together by a rocking action. The four-wheel brakes of the Bendix type have also been improved, so that the coach can be stopped from a speed of 40 m.p.h. in 85 ft., or from a speed of 20 m.p.h. in 21 ft.

The Eaton spiral-bevel type axle has a heavy setscrew mounted in the housing directly back of the ring gear. The purpose of this is to prevent the gear from springing out of line under heavy loads. Malleable-iron spoke wheels are standard equipment for either single or dual application. The tires regularly furnished are 32 by 6.75 in. balloon types.

The parlor-type body installed on the Model 76 is of the same size and general design as that used on the Model 75 chassis. A change has been made in the layout of the heating system, which consists of a two-inch seamless steel tubing connected to the exhaust system through a Petry valve. In the new design only a single branch is taken from the exhaust into the body. This is led along the left-hand side, then underneath and across the floor, and back along the right-hand side to the front, where it drops down beneath the floor and is discharged at the extreme rear through flexible tubing. In spite of the length of this heater intake, distribution of heat is said to be improved and the temperatures inside the body are higher than when the branches along each side were connected directly to the Petry valve.

The overall length of the coach is 289 in., the overall width at the rear fenders 92 in., and the overall height, from the ground to the top of the baggage rack, loaded, 95 in. The width of the aisle is 10 in., and the height of the roof above the aisle 61 in. The spacing between the seats, center to center, is 30½ in.



The New Studebaker Model 76 Motor Coach Chassis

A CONNECTICUT LAW imposing a tax of one cent a mile on motor coaches engaged in interstate commerce, on the mileage traveled within the state, has been upheld by the Supreme Court in an opinion by Associate Justice Stone. The law, the opinion says, has not been shown to be either unconstitutional or discriminatory.

N. E. T. Systematizes Operations

Much attention has been given to traffic handling, rates, ticket forms, schedules and the selection and training of operators

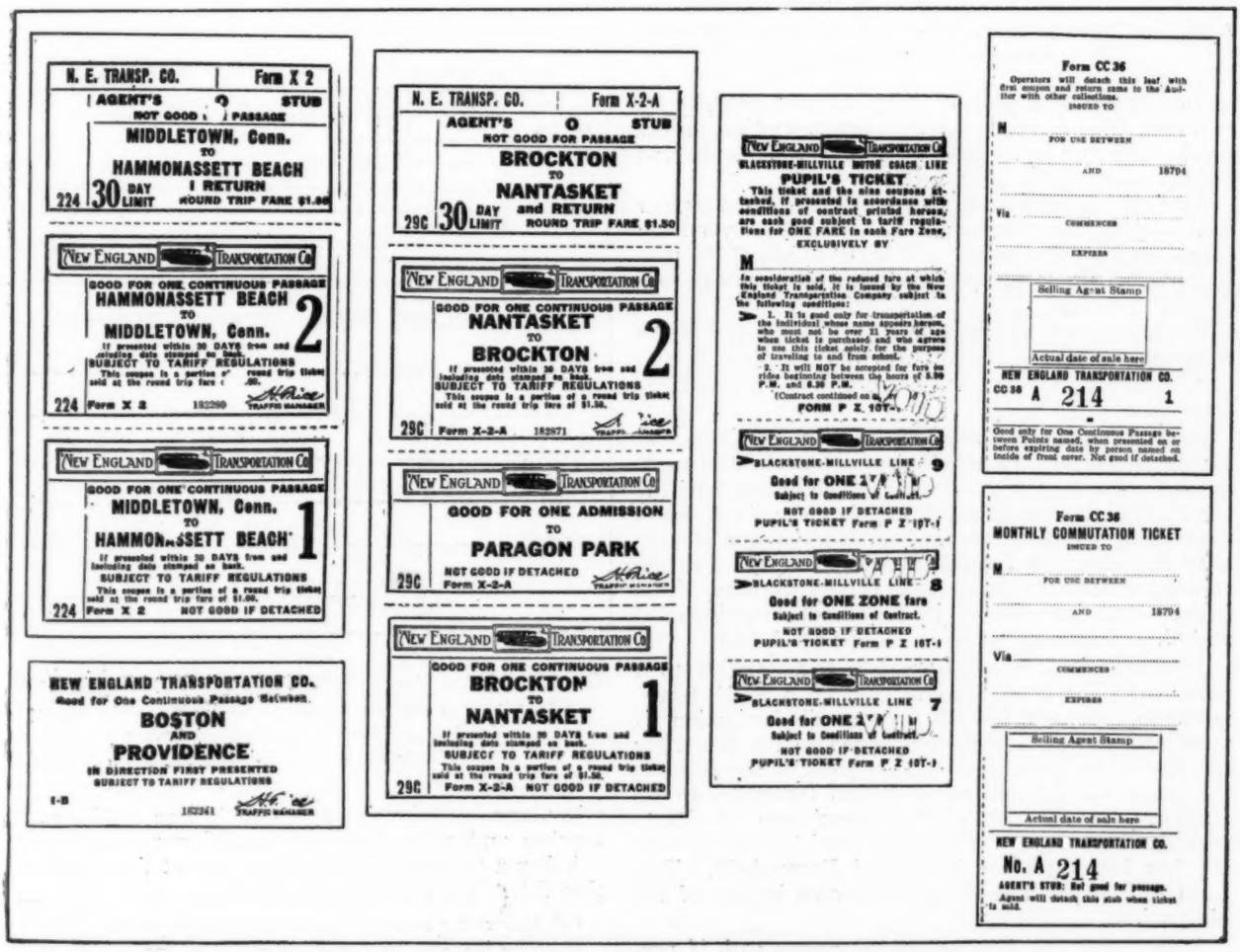
Part II*

THE company issued on May 1, 1927, for the use of ticket agents and coach operators, a traffic manual governing the sale and collection of tickets, cash fares and passes, and the handling of newspapers, mail and baggage. Tickets are sold at the New Haven's railroad stations and the coach terminals where regular ticket agents are located. The tariffs are calculated on the basis of a rate of 3.6 cents per mile. The traffic manual contains a fare schedule divided into zones for each route. Complete instructions are given as to points between which passengers should not be carried locally, where stop-overs are permitted, where regular fare railroad tickets should be honored, between what points commutation, pupils' or 25-ride family tickets should be accepted, and the rules governing the fares for children. In other words, the traffic manual furnishes complete information to the operator regarding tickets, cash fares, rates, zone boundaries, collection of cash fares, baggage, etc.

* Part I of this article appeared in the *Motor Transport Section* of February 25, page 491.

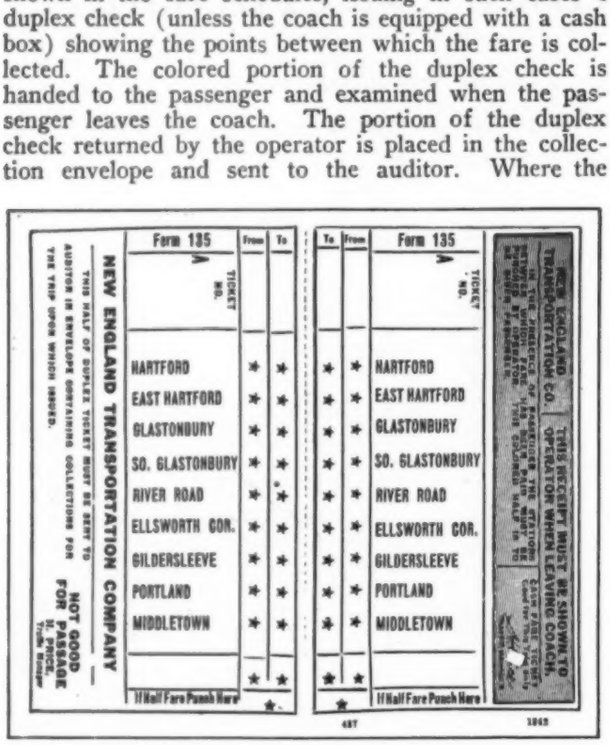
Collection of Tickets and Cash Fares

The operators are responsible for the collection of the fare or a satisfactory equivalent from each passenger. Unless specifically provided to the contrary in the instructions for the individual routes, the collection of fares is made when the passengers board the coach. The tickets are punched in accordance with instructions shown for each route, immediately returned to the passenger and finally collected when the holder leaves the coach. This method is to prevent over-riding on tickets. In the event that the passenger is not supplied with a ticket, the operator collects the cash fare as



Samples of Ticket Forms Used by the New England Transportation Company

shown in the fare schedules, issuing in such cases a duplex check (unless the coach is equipped with a cash box) showing the points between which the fare is collected. The colored portion of the duplex check is handed to the passenger and examined when the passenger leaves the coach. The portion of the duplex check returned by the operator is placed in the collection envelope and sent to the auditor. Where the



A Duplex Ticket Is Used by the Operators When Collecting Cash Fares and Tickets

service is rendered partially by coach and partially by rail, cash fares are collected only between points on the coach route and never to a destination on the railroad (except as specially provided for).

New Haven Railroad tickets which read from a point served by the motor coach to a destination beyond the coach line are punched and left in the hands of the passengers for subsequent presentation to the railway conductor.

When railroad tickets are honored as covered in the foregoing paragraph, the operator fills in the information called for on Form A-20, shown in one of the illustrations.

Example on New Haven-Hartford route—The passenger presents a New Haven railroad local ticket reading from Meriden to New York. The operator of the Hartford-New Haven coach punches the ticket when the passenger boards the coach at Meriden and returns it to the passenger for subsequent presentation to the railroad conductor from New Haven to New York. Form A-20 is then filled in by the operator and included with the collections for the particular coach trip.

A ticket which reads from a railroad station to a point served by a coach route, and upon which transportation has been furnished to a rail destination, is punched upon presentation, returned to the passenger for subsequent collection. When the passenger leaves the coach, the ticket is taken up and forwarded to the auditor. On lines where the interchange of tickets with the New Haven is large, a special form of tally slip has been provided in lieu of Form A-20. This form is designated A-40 and is shown in one of the illustrations.

Strip tickets are honored on all routes and, if presented, the operator detaches sufficient coupons to equal the local fare for the trip. The coupons are then cancelled by punching several times and included in small envelopes with other tickets for the particular trip.

On lines where the Johnson fare boxes are used, the passengers deposit the net fares in the box. The operator, when making change, first hands the amount of fare to the passenger with the request to drop it in the box, and then gives the balance of the change to the passenger. This practice saves time and avoids the dropping of the wrong amount in the fare box.

Should a passenger leave the coach prior to his reaching his actual destination, endorsement is made on the reverse side of the ticket or duplex check, showing the points between which service has been performed, together with the signature of the operator, and, upon application to the traffic department, a refund, if due, will be made to the passenger.

Passengers who have purchased railroad commutation tickets valid for passage between any two points on coach routes where such tickets are honored and who are unable to present them for some reason or another, can be reimbursed for each fare paid on the coaches under the following conditions:

When a passenger is unable to present the commutation ticket, the coach operator will:

(a) Collect the regular fare using a duplex check.
(b) Endorse the passenger's portion of the duplex check with the name, actual trip and date paid.
(c) Require the passenger to offer his signature on the duplex check, together with the full address.

FORM A40
NEW HAVEN TICKETS USED BETWEEN WHITMAN AND

KIND	BRIDGEWATER	E. BRIDGEWATER	ELMWOOD
One Way			
26 Trip			
Comm.			
Pupil			

(a)

FORM A41
NEW HAVEN CARD TICKETS USED BETWEEN NEW HAVEN AND

TO	EA. HAMPTON	COBALT	PORTLAND	MIDDLETOWN	
New York					
Bridgeport					

(b)

Form A-20 NET
NEW ENGLAND TRANSPORTATION COMPANY

R. H. Palmer, Auditor. No._____

_____ Railroad ticket No._____

Reading_____ to_____

Used between_____ and_____

on trip_____ Date_____ 192__

_____
Operator.

(C)

(a) and (b) Are Punch Tally Cards for Reporting Railroad Commutation Tickets Honored But Not Taken Up—(c) Form Filled in by Operator when a Railroad Ticket Is Honored

Upon the presentation of the duplex check by the passenger (within one week from the date of payment of the cash fare) together with the commutation ticket which was valid at the time the cash fare was paid, to the ticket agent who issued the commutation ticket, one coupon is detached from the commutation ticket for each cash fare paid, and the passenger is entitled to a refund of the amount represented by the cash fare payment.

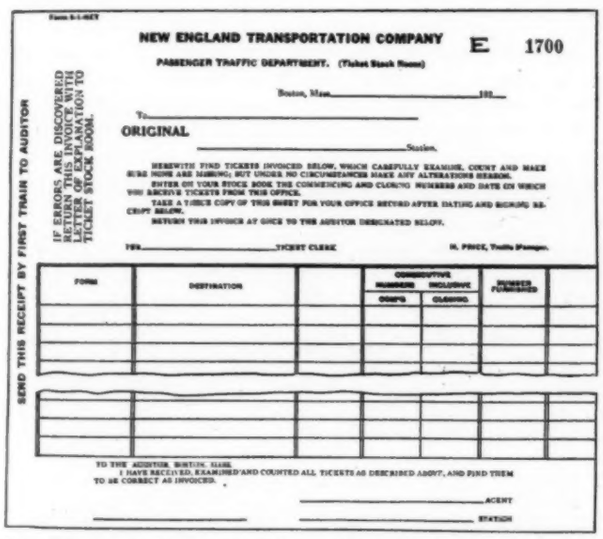
Special Parties

When several days' notice is given, and when coaches are available party business may be solicited by any employee on the following basis of charge:

Round trip movements—Fifty cents per coach mile, using round trip highway mileage, plus 30 cents per mile for any deadhead mileage operated—minimum charge per coach per movement $30, including four hours' waiting. If a coach is required to wait at a destination more than four hours, an additional charge will be made on the basis of $4 per hour or fraction thereof.

One way movements—Fifty cents per coach mile for live load mileage, plus 30 cents per mile for all deadhead mileage; minimum charge per coach per movement $30.

Employees soliciting special parties furnish the applicant an estimated charge, and immediately upon furnishing such information to the applicant, the following information is sent to the traffic department for confirmation: Name of the party; address; by whom applied for; address; number of persons; date of movement; exact point of origin; time of departure; intermediate stops if any; exact point of destination; time of departure from destination; intermediate stops; mileage used in estimate, and price quoted to the party.



NEW ENGLAND TRANSPORTATION COMPANY E 1700

PASSENGER TRAFFIC DEPARTMENT. (Ticket Stock Room)

Boston, Mass. ..... 192...

To .....

ORIGINAL

..... Station.

HEREWITH FIND TICKETS INVOICED BELOW, WHICH CAREFULLY EXAMINE, COUNT AND MAKE SURE NONE ARE MISSING; BUT UNDER NO CIRCUMSTANCES MAKE ANY ALTERATIONS HEREIN.

ENTER ON YOUR STOCK BOOK THE COMMENCING AND CLOSING NUMBERS AND DATE ON WHICH YOU RECEIVE TICKETS FROM THIS OFFICE.

TAKE A THIRD COPY OF THIS SHEET FOR YOUR OFFICE RECORD AFTER DATING AND SIGNING RECEIPT BELOW.

RETURN THIS INVOICE AT ONCE TO THE AUDITOR DESIGNATED BELOW.

YES ..... TICKET CLERK H. PRICE, Traffic Manager.

SEND THIS RECEIPT BY FIRST TRAIN TO AUDITOR

IF ERRORS ARE DISCOVERED RETURN THIS INVOICE WITH LETTER OF EXPLANATION TO TICKET STOCK ROOM.

FORM	DESTINATION		COMMUTATION NUMBERS INCLUSIVE		NUMBER FURNISHED	
			COUPS	CLASSING		

TO THE AUDITOR, BOSTON, MASS.

I HAVE RECEIVED, EXAMINED AND COUNTED ALL TICKETS AS DESCRIBED ABOVE, AND FIND THEM TO BE CORRECT AS INVOICED.

..... AGENT

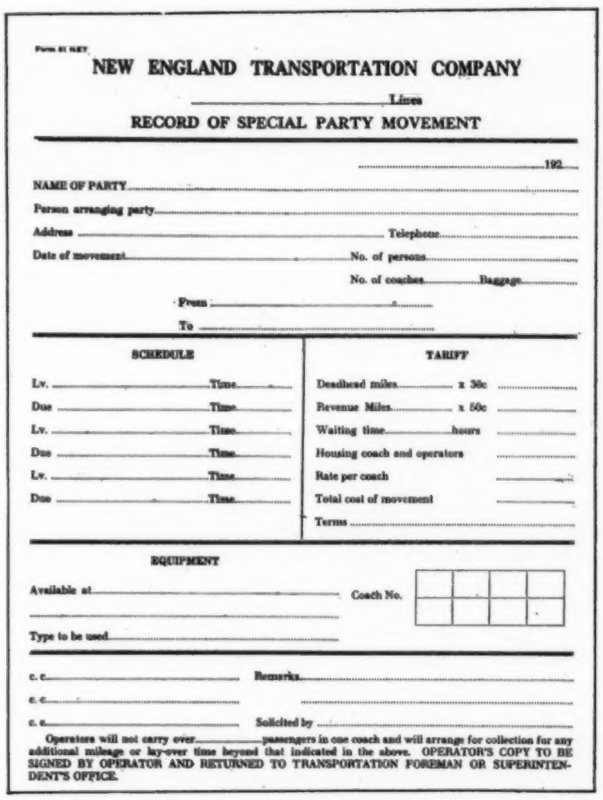
..... STATION

The Form Used When Sending Tickets to Replenish Ticket Agent's Stock

A confirmation is then mailed from the traffic department to the party arranging for the movement, which price governs the movement of the party, unless subsequent information reveals that an added mileage will be performed or additional waiting time is to be encountered.

Prior to the movement of special parties, a formal itinerary is issued by the traffic department, copies of which are furnished to the division superintendent. The instructions are followed in the actual movement, as to schedule, collection, etc., except that if the operator encounters additional mileage or waiting time, an additional charge is made.

When the time is insufficient to notify the traffic department of special movements, the employees are authorized to contract for such movements, equipment being available, on the basis of the charge as outlined in the foregoing, but this does not permit employees to make positive arrangements when information can be conveyed to the traffic department by wire. On emergency parties so handled, detailed information is furnished to the traffic department at the earliest possible moment regardless of the fact that the service already may have been performed.



NEW ENGLAND TRANSPORTATION COMPANY

..... Lines

RECORD OF SPECIAL PARTY MOVEMENT

..... 192...

NAME OF PARTY .....

Person arranging party .....

Address ..... Telephone .....

Date of movement ..... No. of persons .....

No. of coaches ..... Baggage .....

From .....

To .....

SCHEDULE		TARIFF	
Lv.	Time	Deadhead miles ..... x 30c	.....
Due	Time	Revenue Miles ..... x 50c	.....
Lv.	Time	Waiting time ..... hours	.....
Due	Time	Housing coach and operators	.....
Lv.	Time	Rate per coach	.....
Due	Time	Total cost of movement	.....
		Terms	.....

EQUIPMENT

Available at ..... Coach No. .....

Type to be used .....

c. c. ..... Remarks .....

c. c. .....

c. c. ..... Solicited by .....

Operators will not carry over ..... passengers in one coach and will arrange for collection for any additional mileage or lay-over time beyond that indicated in the above. OPERATOR'S COPY TO BE SIGNED BY OPERATOR AND RETURNED TO TRANSPORTATION FOREMAN OR SUPERINTENDENT'S OFFICE.

The Form Used to Keep a Record of the Special Party Movements

Ticket agents at all principal points served are supplied with party tickets. Parties engaging special coaches are instructed to purchase a party ticket covering the complete movement, previous to the actual movement of the coach, and the party tickets are collected by the operator at the time the service is performed. In instances where it is impracticable for the party to purchase a special party ticket, the operator collects cash fares to the amount shown in the itinerary and remits it to the auditor in the customary manner.

Ticket Forms Standardized

The traffic department, in addition to working up a complete schedule of fares, has completed the standardization of a set of tickets that meets all the requirements for this class of transportation service. The tickets, in most cases, follow closely the tickets used on the New Haven railroad. A few of the tickets used are shown in one of the illustrations.

All tickets bear a serial number by which the ticket

agent and the auditor keep a record of the number of tickets sold. The most widely used ticket is the one-way ticket good for one continuous passage between two points. Next comes the round trip ticket printed in three sections. The top section is the agent's stub and the remaining two sections are collected by the operator. These tickets are good for 30 days. Each of the two coupons sold to the passenger reads: "This coupon is a portion of a round trip ticket sold at the round trip fare of $1.60," or whatever the fare may be. During the summer months, certain routes are served which terminate at summer resorts along the New England Coast. In an effort to attract patrons to these routes, a special form of round trip ticket is issued which contains a coupon good for one admission to an amusement park. This coupon is not good if detached from the return coupon that the passenger holds.

Several forms of commutation tickets or books have been issued. The first of these is the monthly ticket, good for 60 continuous passages between two points. The ticket is put up in book form from which the operator detaches a ticket for each trip. The first leaf in the book is the agent's stub which is detached when sold. The second leaf with the first coupon is detached by the operator and sent to the auditor with other collections. These two leaves, which are common to all forms of commutation tickets sold in book form are shown in one of the illustrations. On the inside rear cover of each book is an arrangement for punching the expiration date of the ticket. It is arranged so that tickets can be punched for any day in any month of any year including 1999, thus making it possible to print the books in large numbers. The back cover contains a form to be filled out by the holder of the ticket, so that if the ticket should be lost, the finder can refer to the owner's address and return it.

The remaining two book forms of commutation tickets are the 25-trip family tickets and the pupils' monthly commutation tickets, good for 46 passages. The latter ticket is not good for Sunday trips. Another form of ticket is the pupils' scrip ticket, good for 10 passages and sold at 50 per cent of the regular fare. This ticket is not transferrable and is not sold to anyone over 21 years of age. It is not accepted for fare in rides beginning between the hours of 5 p.m. and 6:30 p.m. A special form of ticket is issued for party business.

New Continental Motors for High-Speed Trucks

IN line with the trend toward greater speed in motor trucks, the Continental Motors Corporation, Detroit, Mich., has designed and built a new series of six-cylinder Red Seal motors. The series includes five models to take care of varying truck capacities, each model independently engineered to give the best results for a motor of its particular displacement. The five models range in size from the 12R, with bore and stroke of 3-⅛ in. by 4-⅜ in., and displacement of 252.55 cu. in., to the 20R, with bore and stroke of 4-⅛ in. by 4-¼ in., and displacement of 380.87 cu. in.

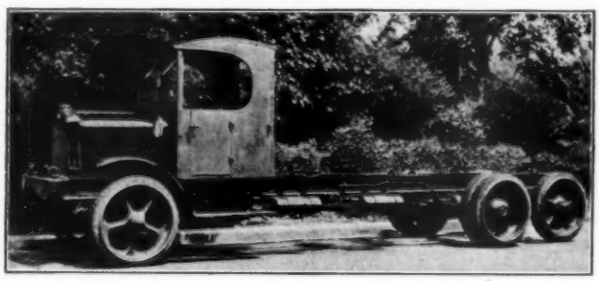
The new Continental motors utilize the overhead type of mechanism, permitting the construction of a narrower motor and thereby allowing more steering gear and frame clearances. Seven bearing crankshafts are used on all the motors of the new series. The cylinder and crankcase are cast in one unit, of nickel iron alloy. The crankcase is heavily ribbed and the lower flange is brought below the center line of the crankshaft, creating a strong and rigid design.

Valve tappets are grouped in guides which can be removed through openings provided in the side of the motor. The tappets have chilled iron faces, which are particularly resistant to wear. Lubrication is by pressure from a gear pump located in the bottom of the oil pan. Main bearings, camshaft bearings, timing assembly, rocker arms and push rod joints are all positively lubricated. A centrifugal water pump provides the water cooling system circulation, and provision is made for mounting the generator, starter, magneto and air compressor.

White Company Brings Out Six-Wheel Motor Truck

SIX-WHEEL motor trucks designed to increase the carrying capacity of these vehicles where state laws limit the capacity of four wheel equipment, have been developed by the White Company, Cleveland, Ohio. In California, for example, the six-wheel White truck is permitted to carry 34,000 lb. as compared to a four-wheel truck limit of 22,000 lb. The third axle assembly is made by outside companies but is available wherever needed on designs prepared by White engineers.

The third axle can be mounted ahead of or behind the driving axle and is so designed that the driving wheels carry approximately twice the load that is carried on the third axle wheels. This distribution of load



Chassis of White Model 52 Heavy Duty Truck with Auxiliary Transmission and Six Wheel Assembly, Showing Mounting of Third Axle Behind the Driving Axle

is considered essential to assure positive traction under all conditions. With the load equally divided over the two rear axles and driving with only one axle, the weight on the driving wheels might not be sufficient to prevent slipping under certain operating conditions.

The White six-wheel truck chassis weighs approximately 12,000 lb. It is equipped with the Westinghouse air brake system and carries 36-in. by 8-in. dual solid tires on the driving wheels, 36-in. by 8-in. single solid tires on the third axle wheels and 36-in. by 7-in. single solid tires on the front wheels. The chassis has a wheel base of 195 in., giving a loading space of 20 ft. from the back of the cab to the rear of the frame. The six-wheel assembly is mounted on the White Model 55 motor truck chassis, as well as the Model 52 chassis.

Reading Designs Coach—Orders Ten

Works out detailed specifications for vehicle to meet railroad requirements—Order awarded to Mack

The Reading's "Club Coach"

THE Reading Transportation Company, highway subsidiary of the Reading Company, has ordered 10 "Club Coaches" from the Mack-International Motor Company, which are being built to the designs of the carrier. The coaches ordered follow closely a sample coach built for the Reading to its specifications by the Mack Company some months ago and the designation "Club Coach" has been given to the design by the Reading highway organization.

The chassis is the standard Mack six-cylinder. The coach will seat 29 passengers—12 double seats, six on each side of the coach, with folding taxi seats in the rear to accommodate five passengers. It is planned to use the rear of the coach just ahead of the taxi seats for handling baggage, in cases where the seats are not needed for passengers, and to facilitate this handling a right rear door has been installed, as well as an emergency exit door on the left. Head room is 74 in., to allow for standees if necessary and also for capacious luggage racks over the seats, as shown in the illustration. Clearance of 35 in. is provided in the baggage compartment when taxi seats are folded.

The seats are manufactured by Hale & Kilburn, with individual seat cushions and arm rests on the aisle side. The double seat cushions are 34 in. wide and are upholstered in genuine Spanish leather, unpleated, cushions being removable. Cushions are likewise provided on the taxi seats. The bottom faces of these taxi seats are covered with durable sheet steel to protect the upholstery when baggage is being handled. Polished aluminum grab handles are placed on the seats. Windows are of the lowering type, with a lowering device equipped with a "T" type handle. Stops are placed in the window guides to prohibit the lowering of the windows to a point where the passenger could comfortably rest his arm on it. Windows in the doors and in the rear are fixed and the quartered windows between the front corner posts and windshield are hinged for ventilation and are screened.

In the Ceiling Are Ventilators and Dome Lights—There Is Ample Headroom and Grab Handles Are Provided

Parcel Racks Are Roomy—the Taxi Seats Are Cushioned

The parcel racks above the seats are of polished brass rods with a clearance of 12 in. from the ceiling of the coach and a width of 18½ in.

The entrance door is of the jackknife type opening inward, with an operating device to be manipulated by the driver's left hand. The right-hand rear baggage door has a 32 in. clearance and can be opened only from the outside. It is equipped with a flush handle and a lock and has an indicator lamp on the dashboard which shows red to the coach operator when the door is open. The floor is covered with 3/16 in. rubber red and green 3 in. square blocks, manufactured by the United States Rubber Company, and laid diagonally. Rubber treads are provided on the steps. The baggage compartment has protective aluminum floor of strips running transversely. The interior woodwork is walnut in color of semi-piano finish. The head line and side trim are of imitation Spanish leather in shade to match the genuine Spanish leather of the seat upholstery.

The Electric Service Supplies Company's "Keystone" ventilators are provided in the roof. The Faraday battery buzzer is used, actuated by two Faraday power switches, one on either side of the coach, each provided

with a signal cord running back to the last transverse seat on either side.

Dome lights and individual seat lights are provided. Of the former there are three, manufactured by the Adams & Westlake Company and of the latter there are 12, or one for each transverse seat, mounted under the parcel rack. All are controlled from the instrument board.

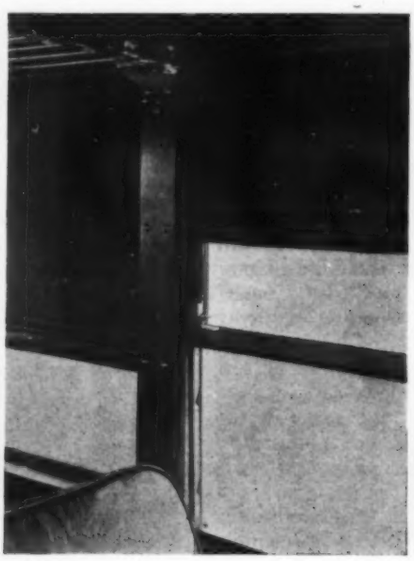
The head, tail and stop lights are standard, the latter having a red indicator light mounted on the dash with which it is connected in series. Each coach carries monogram on the body at the rear and on either side, with the coach number under it. Lettering of certificate number, etc., as required by law in Pennsylvania, appears on the right-hand side of the body between the front door and the hood.

Extent of Proposed Operations

The incorporators of the Reading Transportation Company, all officers of the railway, and generally designated as "Agnew G. Dice et al." have certificates from the Pennsylvania Public Service Commission authorizing them to operate motor coaches on three routes as follows: Lansdale-Doylestown, Jenkintown-New Hope, and Pottstown-Boyertown-Barto. The commission held hearings on March 21 on the application of these incorporators to transfer these certificates to the transportation company.

The commission has not yet acted on an application of the incorporators for authority to operate between Pottsville and Lykens. In addition hearings have been held by the commission but no decisions announced on applications of the transportation company to operate on the following routes: Pottsville-Shenandoah, Mahanoy City-Ashland, Milton-West Milton, Carlisle-Gettysburg, and Carlisle-Shippensburg.

The Seats Have Separate Cushions and Real Leather Upholstery



Showing Location of Individual Reading Lights—One for Each Seat

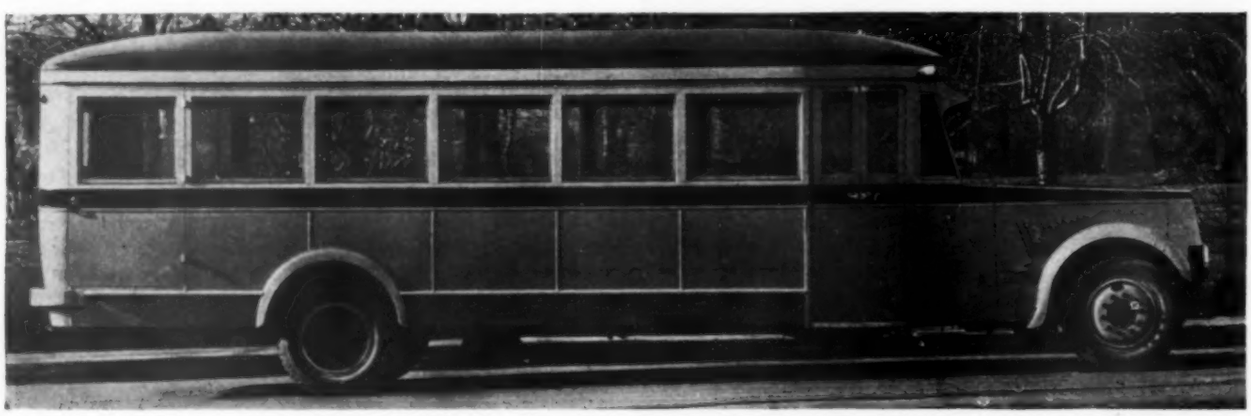
The Door Folds Inward—the Step Is Lighted and Has a Rubber Tread

Hunter illuminated destination signs. Auxiliary brake equipment is of the vacuum type manufactured by the Bragg-Kleaswrath Corporation.

Other auxiliary equipment includes 2 McConnell electric oscillating windshield cleaners, a Bosch warning signal and Exide storage batteries.

Attractive Color Scheme

The outside body of the coach is finished in Duco, the color scheme being as follows: Body, French gray; band rail, Nile green; all above band rail, ivory. Lettering (not shown in the illustrations) is "Reading Transportation Company" in gold leaf on the band rail on either side of the coach, with the Reading Company's



The Color Scheme Is Attractive—French Gray Body, Nile Green Band Rail, Ivory Above

Containers for Bulk Freight

Effects great savings in handling costs on brick, lime, stone and other bulk materials

By William T. Hoops
President, The L. C. L. Corporation

IN an article in the *Motor Transport Section* of February 24 the writer pointed out some of the outstanding features of the merchandise containers, as developed by and covered by patents held by the L. C. L. Corporation, and mentioned that later some similar data would be supplied as to other forms of containers covered by the same or other basic patents.

One of the greatest problems facing the industrial world during the past few years is that of economy in human labor, and the substitution for it, where practical, of mechanical means to as great a degree as practicable.

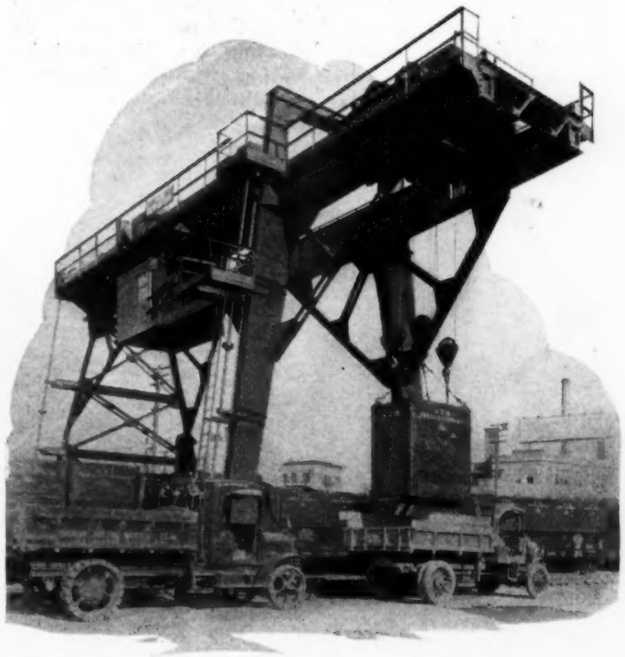
In the building industries and those directly related thereto, i.e. supplying the materials used by the building industries, this is especially important. Following the initial use of the merchandise container, with its labor saving factor as one of its benefits, consideration was given to some means of making a still more substantial saving in the handling of bulk freight.

As a result, there was developed and put into service the so-called brick container, which now has been in use for about five years, and has demonstrated beyond question its practicability and its value. Its advantage largely lies in the saving in human labor, with many consequent economies and, as applied to the handling of brick, these economies are particularly outstanding.

Business Formerly Water-Borne

The brick trade, particularly as developed for the last 50 years or more in the so-called Hudson river district, has been largely a water-borne traffic. The plants were worked only during the season of navigation, and were forced to close up in the winter time,

Each Container Carries a Truck Load—3000 Brick



A Car Can Be Unloaded in Less Than an Hour

employees being thrown out of work, and the organization temporarily lost. With the coming of the following spring, the organization had to be built up again. In order to make sure that the market should not be lost during the winter time, it has been the practice for brick manufacturers using water transportation to manufacture extra stocks of brick in the fall, ship them to New York City and there hold them on barges under storage rates, or unload and store them on some piece of ground which might be available, and sell as they could, before spring.

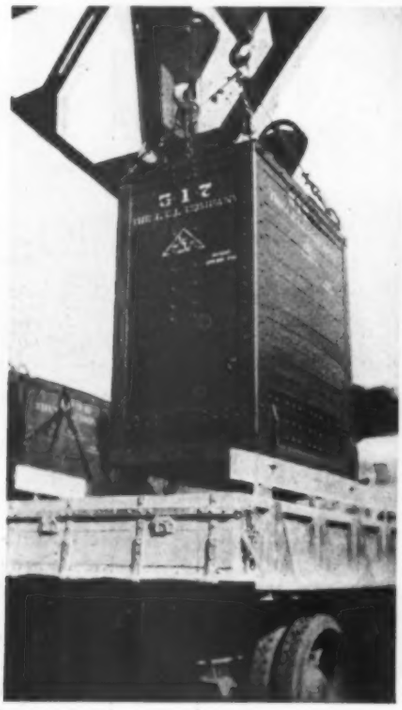
This storage not only meant a great increase in handling costs, but also the tying up of a large amount of capital and in many cases an actual loss, due to change in market prices and building conditions in the spring, as compared with the fall, when the brick was made. In addition, in the metropolitan district, there has gradually crept into existence a building program which shows little, if any, cessation during the winter months. In other words, building goes along during the twelve months and therefore a steady supply of brick is desired to meet requirements as they may arise.

A great many of the brick plants serving the metropolitan district were not of the most modern construction and therefore could not be most economically operated. After a most painstaking investigation as to the possibilities, it was found worth while by many of the brick plants to modernize their plants and in some cases to build entirely new ones, looking toward twelve-month production. Automatic dryers and oil burning kilns were installed and the container car was used to transport the brick manufactured to the market currently, the daily production being shipped out immediately. This has made it practicable to distribute the brick, where needed, in small units varying from a container holding 3,000 bricks, a car holding 36,000, or any multiples thereof.

Each Container Contains a Truck Load

The container itself is, as shown in the accompanying illustrations, of substantial construction, with special devices for opening and closing the bottom doors and a semi-rain (or snow) deflecting top (it not being necessary to have a waterproof top). The dimensions of the brick container are as follows:

Inside dimensions	
Width	4 ft. by 1 in.
Height	7 ft. by 4¾ in.
Length	6 ft. by 11¾ in.



Container Is Lowered Almost to Truck Bed Before Doors Are Opened

When Gates Are First Opened Bricks Drop Only a Few Inches

Container Is Gently Raised Releasing Brick With Minimum Breakage

Outside dimensions	
Width over guides	4 ft. by 8¾ in.
Height over lifting brackets	8 ft. by 4 in. (approx.)
Length	7 ft. by 2⅛ in.

Capacity—210 cu. ft. Average light weight 2,300 lb.

They were made this special size to handle 3,000 ordinary Hudson river brick thrown in at random, this particular unit representing the capacity of the ordinary truck.

Manual Handling the Former Method

In actual operation, the former practice consisted of handling from the kiln by human hands into a wheelbarrow, wheeling the wheelbarrow to and across the dock over a plank onto a barge, and there by human hands unloading the brick and piling it up on the barge; then after the barge was towed down the river, reversing the operation, namely, taking the brick out of the barge by human hands and passing it through human hands to the truck, or, in the case of brick shipped in box cars, employing similar human handlings to and from the box cars. With the container method the brick is loaded in the most modern plants automatically by machinery, and, as the illustrations point out graphically, the containers holding 3,000 brick are lifted by crane at rail terminals, brought into position over the truck body, dropped down to within a foot of the truck body, and the bottom slowly opened by the same crane, without actually setting the container down. This permits the brick to slide out without concussion, breakage of brick, strange as it may seem, being less than when handled by human hands from a barge or a box car.

Container Unloaded in Four Minutes

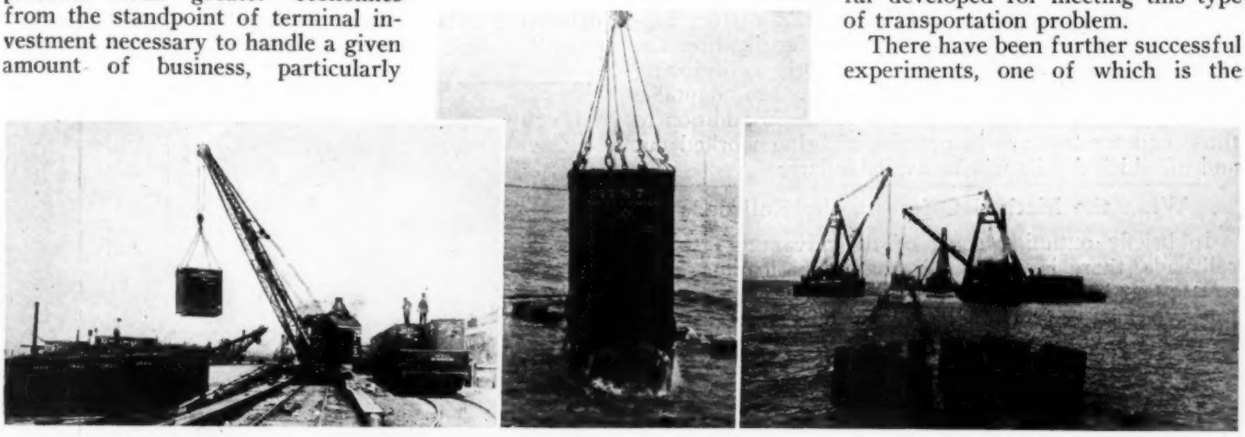
The unloading of the container takes less than four minutes, as compared to many times that with human handling. In the most efficiently constructed trucks, having high sides and backs, there is no loss of brick in any way, and in fact trucks have been constructed and are in actual use which hold two container loads (6,000 brick) making for still further economy. Some members of the Brick Association, on their own initiative, have pointed out that even with a truck holding 3,000 brick the motor truck efficiency is about two to one, comparing container brick and either the barge or the box car brick. This in itself, entirely aside from the labor factor, presents a very great monetary advantage in reduced trucking costs, and speeding up of operations.

Car Efficiency Quadrupled

From the standpoint of a railroad, the handling of brick in container cars presents many advantages. First, there is a maximum loading of 132,000 lb. per container car of 12 units of 3,000 brick each, as compared with an ordinary box car with a thrown-in load of not to exceed 60,000 lb. In other words, we utilize one piece of equipment to handle more than would ordinarily be handled in two pieces of equipment, assuming that the traffic could be secured for rail haulage at all, in competition with water transportation.

Second, through quick unloading on a given piece of track a container car can be released in much less than one day—in fact in less than an hour, if continuous unloading is undertaken, as compared with an average of approximately two days for unloading a load of brick from a box car. This means, when reduced to figures, an efficiency in car utilization of about four

to one in favor of container handling, as compared with the box car, since double the load is handled in one-half the unloading time. This means also that on a given piece of team track in a given period of time by the container method four times the tonnage can be handled, as compared with box car movement. It is perhaps unnecessary to do more than point out that this, in addition to the specific economies in operation, presents even greater economies from the standpoint of terminal investment necessary to handle a given amount of business, particularly where there is congestion and lack of ability to obtain additional terminal room for tracks, even if the neccessary money is available.



Containers Filled With Refuse Stone Transferred to Barge, Towed Out to Crib and Dumped to Form Breakwater

Other Uses for Bulk Containers

The brick container, as in actual use, has increased greatly in use during the past five years, and is being expanded as its merits become known. Moreover, in addition to handling brick, it is adaptable to use for other forms of bulk material.

As an illustration, during the past summer, the same form of containers were used in transporting so-called refuse quarry stone from a rail quarry some 38 miles from Cleveland, O., into Cleveland. There the containers were put on barges, taken out into the lake and dumped into a crib to form a breakwater. A considerable amount of tonnage was handled, and accompanying illustrations show details of how the operation was performed. The success of this experiment is such that the users have felt it to be a distinct advance in transportation, representing the most satisfactory means so far developed for meeting this type of transportation problem.

There have been further successful experiments, one of which is the transportation of such materials as bulk lime, which, in common practice is handled in a box car and must be shoveled out with consequent costly labor, which is often difficult to obtain satisfactorily, due to the unpleasant nature of the load.

Saving $40 Per Car in Unloading Expense

Here, too, there is a comparison favorable to the container car, a special container type having been developed having a waterproof top and waterproof and leakproof bottom, drop doors and capacity for 130,000 lb. of lime to the car, as compared with not to exceed 40,000 lb., and frequently less, in a box car. From the

The Container Car Carries a Net Load of 132,000 lb. of Brick—More Than Twice That of a Box Car

standpoint of the consignee and shipper, the economy in labor represents about $40 a car, this being the amount expended to unload by human hands, with detention of equipment as an added factor. The unloading from the container car is a matter of minutes and a whole car can be released in an hour, if such speed is desired.

There are similar container units worked out for handling ore for trans-shipment to vessels, either for coastwise or export trade, and the reaction of the shipping and receiving public to them so far justifies the belief that what has been done is merely a beginning of what will ultimately be done, for they are adaptable to many and varied uses, some of which, in addition to those enumerated, are in process of being worked out and of which details will be available later.

What the Method Offers to the Railroads

In briefly outlining some of the advantages to the railroads, there is, of course, maximum loading, with consequent high revenue producing a very satisfactory rate per car mile; economy in terminals, etc.; a decrease in capital investment for equipment necessary to handle a given tonnage; and an actual operating economy in transporting over the road, loaded or empty, and in switching at both terminals, either loaded or empty, since fewer cars are required to handle a given load.

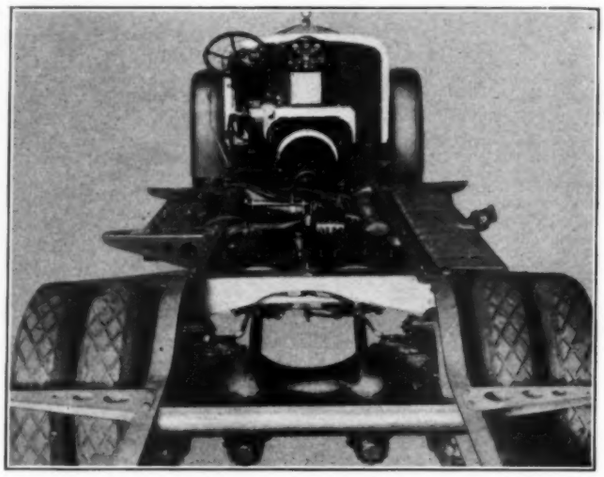
It may be contended that the added investment necessary to handle traffic in this manner—containers, cranes, etc.—presents a considerable obstacle to its adoption, but investigation will develop that such investment is many times discounted by the economies. The cost of furnishing and operating cranes for unloading, reduced to a unit basis, represents but a small amount per container unit.

The primary duty of a railroad, since it is a public servant, is to offer the very best grade of transportation suited to the needs of the public at the lowest practicable cost consistent with such good service. Moreover, it must earn proper returns for the owners of railroad property, namely, the stockholders. These two tasks present a very great problem to those having the operation of the railroads under their jurisdiction. The bulk freight container should offer an opportunity of realizing a largely increased net return on a given amount of traffic, without asking the shipper or receiver to pay any more than he has paid in the past. This, it would seem fair to state, constitutes a real advance in transportation and, as may be developed, should become increasingly valuable both to the public and to the railroads.

White Builds Gas-Electric Motor Coach

THE White Company, Cleveland, Ohio, has recently started production on a gas-electric motor coach chassis designed for operation over routes combining suburban and city traffic conditions, or for inter-city service. The new coach, known as model 54 has a 227-in. wheel base with a length over bumpers of 358 in. and an over-all width at the rear axle of 95 in. The weight of the chassis complete, with equipment and spare wheel and tire, is 11,500 lb. The chassis has been designed as a complete unit, making it possible to mount the bodies without alterations to the chassis wiring. In addition, attention has been given to the mounting of the motors and the generator so that the work of removing any unit is made a simple operation. The chassis layout has been designed to provide a maximum of accessibility from a service standpoint.

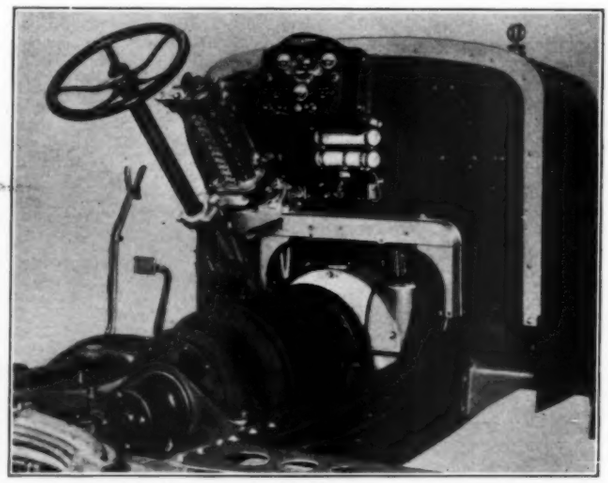
The generator is driven by a flexible steel shaft which runs entirely through the generator to the commutator end, the drive being taken through rubber ball joints. The two motors are connected to the underslung worm drive rear axle by short universal joint shafts and the propellor shaft brakes are mounted directly on the rear



General View of White Gas-Electric Chassis

end of the motors, these forming a part of the motor design.

The engine is of the six-cylinder, overhead valve type, with cylinders having 4⅜ in. bore by 5¾ in. stroke, 519 cu. in. piston displacement and developing 100 hp. The crankshaft and camshaft each have seven bearings and a Westinghouse air compressor mounted integral with the engine is driven from the front end of the crank



A Close-up of the Generator and Controls

shaft. The pistons are aluminum and the cylinder head is of the removable type and, with the valves, may be removed as a unit. Force feed lubrication is provided to all main, connecting rod, camshaft, compressor, accessory drive and chain idler bearings. Direct lubrication is provided for the over-head valve mechanism.

The generator is a General Electric type DT-1125, generating 200 to 290 volts, 300-600 lb.-feet, 450-600 amp. at a speed of 1,400 to 1,800 r.p.m. There are two driving motors, General Electric type 1124, series wound operating on 250 volts, 210 amp. at 2,000 r.p.m. A General Electric controller is located in a convenient position for operation. Series and parallel, neutral, brake and reverse positions are provided with an arrangement for engine testing with the controller in the neutral position. Variation in speed and power is secured by the engine foot throttle.

Steering Gear and Brakes

The chassis frame is of heat-treated pressed steel, channel section with channel section cross members together with a sub-frame for the generator. The steering gear is located at the left side and is of a special irreversible type, with adjustable ball thrust bearings and variable reduction. The service brakes are of the internal expanding type operated by air pressure on both front and rear wheels with metal to metal friction surfaces. Mechanical emergency brakes are provided which are operated by a hand lever, actuating brake shoes contracting on two drums, one mounted directly at the rear of each driving motor. In addition, there is available the electric emergency brake of the regenerative type operated by the controller. The springs are of the semi-eliptic type, front and rear, the front springs having a length of 48 in. and a width of 3 in. while the rear springs are 64 in. long by 4 in. wide. The front axle is a one-piece drop forging having an I-beam section.

The front wheel spindles are mounted on taper roller bearings. The rear axle is of the underslung worm and wheel type with two independent wheel drives. The rear axle ratio is 11 to 1. The rear axle housing is a one-piece, heat-treated, steel casing.

The gasoline feed is of the triple unit, electric auto pulse pump type with Zenith strainer. The main gasoline tank is mounted on the right side of the chassis and has a capacity of 51 gal. The carburetor is a Zenith type SV-8, double venturi, compensating jet.

Disc wheels are standard equipment and are fitted with 36-in. by 8-in. high-pressure cord tires, single on the front wheels and double on the rear. The lighting equipment is a two-unit 12-volt, voltage regulated, single wire starting and lighting system, having a 12-volt battery of ample ampere-hour capacity. The instrument board contains the speedometer, air pressure gage, oil pressure gage, ammeter, ignition switch, carburetor control, engine primer, two five-gang switches, three pilot lights and an instrument light.

Gasoline Vehicle Meter

A DEVICE for measuring the fuel consumption of internal combustion engines has been developed and placed on the market recently by the Economy Electric Devices Company, 37 West Van Buren street, Chicago. It is adaptable in railroad service to use on gasoline motor coaches, rail motor cars and similar equipment. It is designed to be rugged in construction and accurate, measuring the engine fuel as used and registering the amount in easily read figures. The meter, connected between the fuel and vacuum tanks, show the actual quantity of fuel used to the nearest tenth of a gallon, thus permitting accurate checks to be made of individual fuel consumption records by men, vehicles and routes and a premium put on fuel economy and efficient operation.

Each meter is designed and calibrated for greatest accuracy of registration when used with the vacuum tank system of gasoline supply. A positive liquid-displacement type of measuring chamber is employed in the meter which consists of three main parts, a measuring chamber and housing at the bottom, an intermediate chamber which carries the mounting lugs and the inlet and outlet ports, and an upper housing which protects the register and tank dial. Underneath the measuring chamber is a dirt and water trap with a filtering screen of exceptionally large area so located that the flow through it is upward and at a comparatively low rate. A plug provides for easily draining this trap.

The rotating element of the measuring chamber drives a set of accurately milled gears mounted on phosphor bronze shafts. These gears are submerged in liquid at all times and the driving shaft to the register is brought out through a gasoline-tight stuffing box. The register consists of a dial reading directly in gallons and tenths of gallons up to 10,000 gal.

In addition, there is provided a separate clock-type dial for registering the gasoline as withdrawn from any one filling of the fuel supply tank. In operation, the red marker is set at the full capacity of the tank. The meter-driven black hand, by means of a reset plunger at the side of the meter, may be set at any point. When the tank has been filled, the meter-driven black hand is set to coincide with the full tank capacity. Then, as fuel is used and measured by the meter, this black hand travels toward zero in accordance with the consumption.

Economy Gasoline Vehicle Meter

Thus at all times it indicates the amount of fuel which has not yet been delivered to the engine. The meter-driven hand can be set forward to account for refilling.

In addition to promoting fuel economy, the use of the Economy gasoline vehicle meter is said to afford a check on the condition of equipment and aid the mechanical department in correct maintenance.

Choosing Seats Which Attract Passengers

Railroad motor transport officers believe question important in attracting and holding business—Type of service principal determinant

OFFICERS in charge of railway operations of motor coaches are in general agreement that the type of seat used in them is an important factor in securing traffic. There is also general agreement that in every instance the nature of the service in which the motor coach is to be used is the factor of prime importance in deciding which kind of seats to install. On the longer motor coach routes seats of the parlor type are favored, particularly when most of the passengers are in the coach for periods of more than two hours. For shorter routes and particularly for city service, the undivided coach type of seats is ordinarily used.

A trend toward more and more widespread use of parlor-type motor seats is noted. The element of competition is looked upon as the cause of this, the relative comfort of competitive motor coaches having become a deciding factor among the patrons, since all motor coaches offer the same speed and convenience.

Southern Pacific Uses Both Types

The Southern Pacific Motor Transport Company, which has 43 motor coaches operating in the state of Oregon, has 14 coaches equipped with parlor-type seats and 29 with coach-type seats. Seventeen of its coaches are used on intercity routes and 26 on city, "street car" routes. According to T. B. Wilson, vice-president and manager, parlor-type seats were chosen for all but one of the interurban runs for the purpose of making coaches as comfortable as possible for long distance travel, the lines of the Southern Pacific Motor Transport Company extending from Portland, Ore., to Ashland, a distance of 330 miles. On the one interurban run which has coaches fitted with undivided coach-type seats, the traffic is composed entirely of commuters riding between Portland and small communities within a radius of 13 miles, and the average distance traveled by each passenger is so short that the ordinary coach seat answers the purpose. No parlor-type seats, of course, are used in the coaches providing "street car" service in the city.

The Norfolk Southern Bus Corporation uses seats of the parlor type in all of its motor coaches, its business being entirely interurban. According to L. B. Wickersham, general manager, it is believed that the parlor-type seats help to attract patronage.

Parlor seats of the bucket type, equipped with air cushions, are used in the motor coaches of the Rutland Transportation Company. These were selected because it was the desire of the Rutland to make its coach passengers as comfortable as possible, which it was felt would have a tendency to induce passengers

The Union Pacific Uses Parlor Type Seats Between Portland, Ore., and Pendleton

to make repeated use of the service. The Rutland has one route which is approximately 67 miles long.

The motor coaches of the Nashville, Chattanooga & St. Louis Motor Transit Company are of the street car type and have undivided coach-type seats covered with leather. Seats of this kind are considered more satisfactory for the class of service in which the N. C. & St. L. coaches are used. The route covered by

The Norfolk Southern Uses Parlor Type Seats Exclusively

them is only approximately 30 miles long, and serves a mountainous territory and a class of patrons who are attracted more by service and less by style.

The motor coaches of the Samoset Company, subsidiary of the Main Central, are equipped with seats of the parlor type. These are individual wicker chairs with double springs, over-stuffed cushions and colonial grain leather upholstery. According to D. C. Douglass, managing director of the company, these seats were selected on account of the comfort for passengers which they provide.

Northland Uses More Parlor-Type Seats

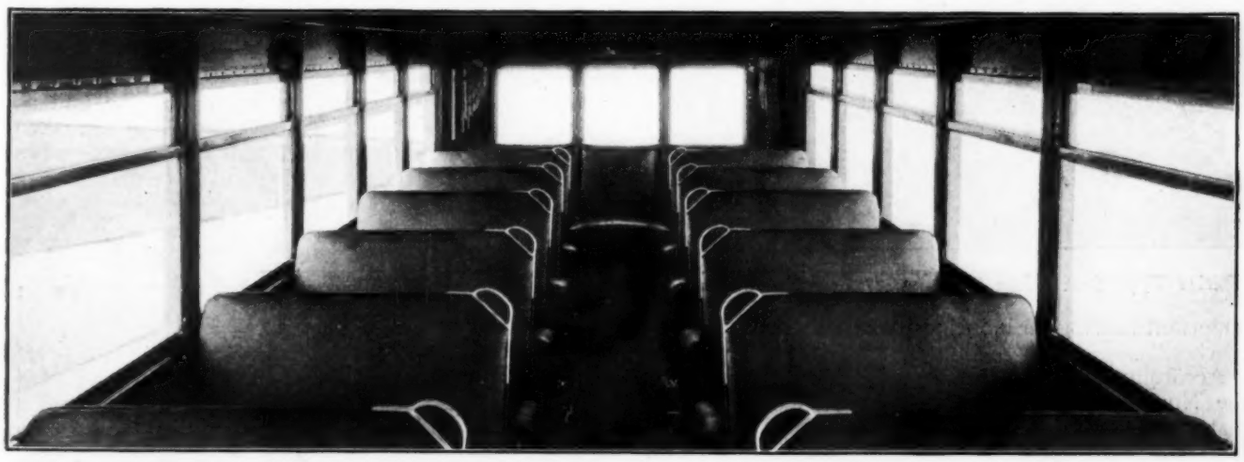
The Northland Transportation Company, subsidiary of the Great Northern, uses both parlor-type and coach-type seats. About four-fifths of its fleet is equipped with seats of the parlor type. In its motor coaches operating on intercity routes of considerable length, parlor-type seats are used exclusively, while on its shorter routes, where the density of traffic is greater, coach-type seats have been adopted. Seats of the latter type are considered a little less comfortable but are desirable on short routes since they make room for more passengers per coach. The Northland officers believe that parlor-type seats should be furnished on all motor coaches which operate on routes over two hours in length.

The New England Transportation Company uses deluxe and semi-deluxe type motor coaches almost exclusively. In all these coaches, seats of the parlor-type on both fibre and hardwood frames are used. It has approximately 95 motor coaches equipped with fibre and reed frame seats, the rest of its fleet of nearly 250 coaches having seats mounted on hardwood frames. All of the seats in its deluxe type coaches are 36 in. twin seats. In both deluxe and semi-deluxe types of coaches all seats have both spring box cushions and air cushions. Twin seats 34 in. or 35 in. wide are used in the semi-deluxe coaches.

Parlor-type seats are used exclusively in the 21 motor coaches of the Santa Fe Transportation Company. Fifteen of these coaches have revolving individual parlor chairs of a special type, these being used in the "Indian Detour" service. Parlor-type seats are preferred since they are more comfortable than coach-type seats, especially in runs of considerable length such as those operated by the Santa Fe. The "Indian Detour" equipment was designed especially to provide comfort for passengers and little consideration was given to the provision of seats for a maximum number of passengers.

The motor coaches of the Canadian Pacific Transport Company are of the "street car" type and have non-reversible coach-type seats. These operate over a short route, and it is felt that for routes of this kind the coach-type seat meets all requirements. M. W. Kirkwood, general manager, believes, however, that in intercity service where coaches are operated over routes 30 miles or more in length, they should be equipped with seats more comfortable than the ordinary undivided coach-type seat.

The Boston & Maine Transportation Company, as reported in the Motor Transport Section of November 26, 1927, has recently increased the seating capacity of the motor coaches on certain of its principal routes from 20 passengers to 27 passengers. The coaches used on these routes ordinarily contain seats for 29 passengers, but when it placed its first order for them the B. & M. decided that larger seats were desirable and had special chairs installed for 20 passengers. The experience of two years' operation of these coaches, however, led to the conclusion that the small number

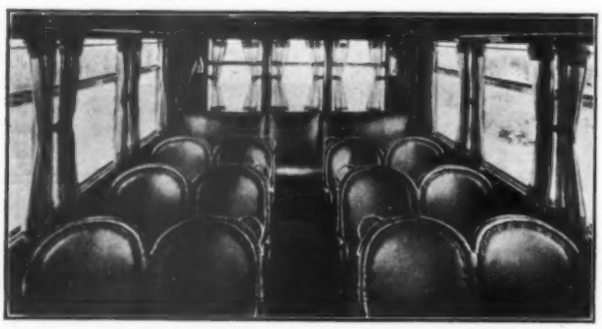


Coach Type Seats Are Favored for Short or City Routes

of people who would be uncomfortable in the smaller seats does not offset the loss of revenue which results from reducing the capacity of the coaches almost 33 per cent. The large seats, therefore, were removed and smaller ones, giving a coach seating capacity of 27 passengers, with no seats over the wheel housing, were substituted. On its principal routes the Boston & Maine uses parlor-type seats exclusively, but on some of the shorter ones it uses coach-type seats.

The statements of some of the officers in charge of railway motor coach operations reflect their experience in handling the problem of the proper type of seats to install. "The type of seat used in the motor coach," says Mr. Wilson of the Southern Pacific, "is an important factor in securing traffic, and the parlor type is becoming more widely used in modern equipment. During the early development of motor coach service, the traveling public used motor coaches primarily because they provided faster and more frequent service to points not so conveniently served by trains. Not so much attention was given to riding comfort. However, as this mode of travel became more popular and lines extended to cover a wider territory, patrons of the motor coach demanded comfort as well as convenience, and by process of evolution, there was brought about the luxurious motor coach of today. We find that the habitual motor coach riders are very critical in their appraisement of the equipment they ride in, and proper seating is a widely discussed problem. An uncomfortable seat means a tired and disgruntled passenger at the end of the trip and a friend lost for the operator."

G. L. R. French, of the Rutland Transportation Company, says, "Our experience in motor coach operation is limited and while we have no statistics to so indicate, we feel that comfortable seats should have an



Parlor Type Seat Often Used in Semi De Luxe Coaches

important bearing on inducing passengers to ride in the coaches."

According to R. W. Budd, manager of operations of the Northland Transportation Company, the type of seat used is one of the most important factors in securing traffic. He considers the provision of motor coach seats which are attractive in appearance and comfortable to ride in of the greatest value as an advertisement. Mr. Budd sees a trend in the direction of the wider use of motor coach seats of the parlor type. It costs but little more to equip a vehicle with such seats, he says, and the returns received are far greater than the additional expense.

F. S. Hobbs, general manager of the New England Transportation Company, says, "While the seats may not play such an important part in the securing of traffic, nevertheless, in our opinion, they play an important part in the retention of secured traffic. To our mind the trend in seats for the deluxe parlor type of coach is the 36 in. twin seat with separate cushions, using both the box spring cushion and the air cushion together with a spring back. On certain routes the head roll is advantageous."

Electrically Operated Motor Coach Lift

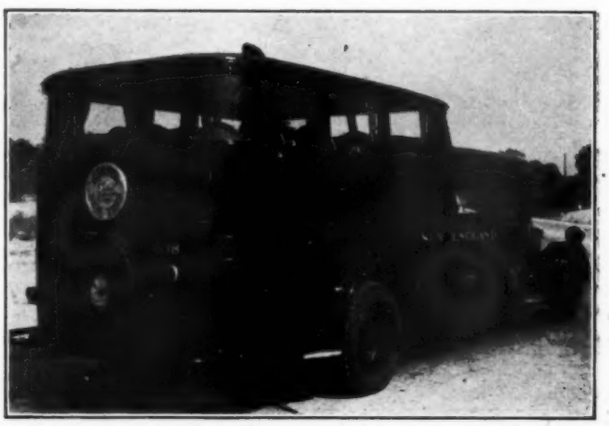
AN electrically operated motor coach lift which will handle coaches or trucks with 25 ft. wheel bases, weighing up to 18,000 lb., has been placed on the market by the Birmingham Machine & Foundry Company, Birmingham, Ala. The lift shown in the illustration is operated by a 5-hp. motor which drives

The Elvo Electrically Operated Lift Which Can Raise a Coach 25 ft. Long Weighing 18,000 lb.

through worm and gears and three drive shafts that raise or lower the table. The four corners of the table are attached to the ends of steel cables that pass over pulleys located on the columns. The table is operated by a push button control which makes it possible to stop it at any position and securely lock it in place. The table can be raised 6 ft. Most installations are plugged in on the lighting circuit—110 or 220 volts.

No excavation is needed for setting up the unit as it sets flush on the floor. It can be moved about, when desired, with but little trouble. All that is required is to remove the electric power plug and place the lift on a truck without taking it apart.

* * *



One of 33 A.C.F. Parlor Observation Coaches in Service on the N. E. T.

Motor Transport News

THE NEW YORK, NEW HAVEN & HARTFORD is seeking permission of local authorities to replace passenger trains operating between Framingham, Mass., and Lowell with motor coaches.

THE MCCLOUD RIVER RAILROAD has secured by transfer a motor coach operating certificate covering the route between Mt. Shasta, Cal., and McCloud.

THE SOUTHERN PACIFIC MOTOR TRANSPORT COMPANY, subsidiary of the Southern Pacific, has secured a certificate of convenience and necessity permitting the operation of a motor coach route between San Francisco, Cal., Truckee and Tahoe. It has also acquired an operating certificate permitting the operation of a motor coach line between Napa, Cal., and Santa Rosa.

THE APPLICATION of the Hart Motor Coach Company, Boston, Mass., for a certificate of convenience and necessity to permit the operation of motor coaches over the highway between Winchendon, Mass., and Cambridge, over which the Boston & Maine Transportation Company, subsidiary of the Boston & Maine, now operates, has been denied by the Massachusetts Department of Public Utilities. The granting of the application was opposed by the Boston & Maine.

THE NORTHLAND TRANSPORTATION COMPANY, motor coach operating subsidiary of the Great Northern, has purchased the 200 miles of motor coach lines of the Mesaba Transportation Company in Northern Minnesota and has had the operating certificates transferred, with the approval of the Minnesota Railroad and Warehouse Commission. The Mesaba Transportation Company lines extended from Hibbing, Minn., to Grand Rapids, from Hibbing to Duluth and Bemidji, and from Hibbing to Minneapolis and St. Paul.

* * *

ROAD TRANSPORT BOSS:—"'Ere you get out of this. There's only room for me. Want to be a bloomin' monopolist, don't cher!"

From the Railway Review (Great Britain)

A View of a British Railway Problem

Alton Seeks Additional Certificate

The Alton Transportation Company, subsidiary of the Chicago & Alton, has applied to the Missouri Public Service Commission for a certificate of convenience and necessity to permit the operation of a motor coach line from Higginsville, Mo., to a connection with federal highway No. 40, over which the Alton proposes a St. Louis-Kansas City motor coach route. The Alton now has pending before the Missouri Public Service Commission applications covering the route between St. Louis and Kansas City; a route between Mexico, Mo., and Jefferson City; a route between Mexico and Fulton; and a route between Odessa and Kansas City. It is expected soon to apply for a certificate covering a motor coach route between Louisiana, Mo., and Mexico.

Motor Transport Men to Address A. S. M. E.

At the National Materials Handling Meeting of the American Society of Mechanical Engineers to be held in Philadelphia on April 23 and 24 there are listed among the speakers two railroad motor transport men. These are G. C. Woodruff, assistant freight traffic manager of the New York Central, and F. J. Scarr of the Scarr Transportation Service, New York.

Mr. Woodruff's address is entitled "Modern Handling Methods in Railroad Transportation" and Mr. Scarr will speak on "Store Door Delivery of Freight by Motor Trucks." Both these addresses are scheduled for the technical session on April 24 to begin at 9:30 a. m.

Cotton Belt Files Brief in Proposed Motor Coach Line Case

Supplementing verbal argument at the recent hearing on its request to discontinue passenger train service on its branch line between Tyler, Tex., and Lufkin and to substitute motor coach service for the train service, the St. Louis Southwestern has filed a brief in support of its request with the railroad commission of Texas. At the hearing on the case held at Alto, Tex., the commission ruled that it could not consider the question of the proposed contract of the Cotton Belt with a local motor coach company whereby it planned to render service on the highway. The hearing, therefore, involved only the proposed discontinuation of two daily passenger trains in each direction.

In its brief, the Cotton Belt contended that the commission erred in refusing to consider the proposed contract between the railway and the motor coach company; that the commission has no power to prevent the withdrawal of passenger train service; and that since the state law requires only one mixed train a day on a given line, the railway cannot be forced to continue operation at a loss, since public convenience does not necessitate such operation.

Urge Early Action on Legislation

The Pennsylvania, the Reading, the Central of New Jersey, and the Delaware, Lackawanna & Western, and their subsidiary companies, have, through counsel, petitioned the Interstate Commerce Commission to make an early recommendation to Congress for some form of regulation of interstate motor coach operations. Their petition was worded as follows:

"The above named railroad companies invite the attention of your Commission to a phase of the situation involved in the above entitled proceeding which seems to them to be most urgent and important.

"The problem of co-ordinating motor and rail transportation present many complexities and difficulties. It follows that there will be differences of opinion on some of the recommendations submitted in Examiner Flynn's exhaustive and able report. There is one point, however, on which there is general accord, that is, the urgent need for the prompt regulation of interstate motor buses.

"Examiner Flynn's report (sheets 40-41) calls attention to the serious problem arising from the operation of interstate motor buses between Philadelphia and New Jersey points via the Delaware River Bridge and between Northern New Jersey points and New York via the ferries and the Holland tunnel.

"Confronted with heavy and increasing losses of revenue

from the operation of interstate motor buses, the carriers on whose behalf this memorandum is filed urgently need relief through the prompt enactment of a federal law providing for the regulation of interstate motor buses. Such law must be the first step in dealing with the problem of cordinating rail and motor transportation. The above named railroad companies believe that a law constituting an authority to determine the primary question whether public convenience and necessity require the operation of interstate motor buses on particular routes should be passed with the least possible delay.

"In order that Congress may have the benefit of your views in considering such law, these companies respectfully urge that the Commission file and transmit to Congress a report with the recommendation that authority be constituted as promptly as possible to pass upon applications for permission to operate interstate motor buses."

Orders for Equipment

THE BOSTON, REVERE BEACH & LYNN has taken delivery on two A.C.F. 23-passenger urban coaches.

THE NEW ENGLAND TRANSPORTATION COMPANY has ordered 15 parlor observation coaches from the American Car & Foundry Motors Company, bringing its fleet of this type of coach to a total of 33.

THE READING TRANSPORTATION COMPANY has ordered 10 "Club Coaches" from the Mack-International Motor Company These follow closely in design the sample coach previously built for this company by the same manufacturer. See descriptive article elsewhere in this issue of the *Motor Transport Section.*

Among the Manufacturers

Stanley P. Seward, advertising manager of the **White Company,** Cleveland, Ohio, has been promoted to assistant to the vice-president. Mr. Seward will continue to direct the advertising department in addition to the new duties which he is assuming. Mr. Seward entered the advertising department of the White Company in 1916 and later became manager of the sales promotion department. He was appointed advertising manager in 1923.

The Brockway Motor Truck Corporation of New York and the **Indiana Truck Company,** of Marion Ind., are to be merged into a single company, retaining the name of the Brockway Motor Truck Corporation. The new company will have combined assets of $9,000,000. Both lines of Brockway and Indiana trucks will continue in production and all of the 38 direct factory branches of the tow companies will be maintained in operation.

Fred A. Wales, formerly sales manager for the body division of the Aluminum Company of America, has been appointed sales promotion manager of the bus coach work division of the **Murray Corporation,** Detroit, Mich., according to an announcement by William Robert Wilson, chairman and president of the Murray Corporation. Mr. Wales has had 12 years of experience in the aluminum and aluminum alloy industry. As an officer in the production division of the United States Army Engineers during the war, he was connected with the development of the Class B military truck, known as the Liberty motor truck.

F. A. Wales

A Book on Accounting

Motor Bus Accounting Practice, by Irville A. May. 200 Pages, 6 in. by 8¾ in. Bound in Cloth. Published by Ronald Press, New York.

The writer of this book is comptroller of the Connecticut Company, an electric railway subsidiary of the **New York,** New Haven & Hartford and a large operator of motor vehicles. In addition he is a certified public accountant. All of which points to his fitness to write about motor line accounting problems, and especially those of a motor line which is the subsidiary of a railway. Accounting systems for both small and large operations are described clearly and in detail, with various recommended report forms illustrated. There is an appendix giving the classification of accounts recommended by the American Electric Railway Accountant's Association. While the writer has evidently borne in mind primarily urban motor coach lines, probably most of his recommendations would also apply to interurban lines, such as most steam railroads operate. Moreover, as far as we know, this is the only authoritative work of its kind in existence. Hence it should be a valuable guide to all persons interested in its subject matter.

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A White Coach Operated in Chicago-Detroit Rail-Highway

The Shore Line Motor Coach Company is an Insull property—Between Chicago and South Bend, Railway is used. Highway Coaches for Rest of Route.